Southeast Landscape Resource Atlas

A support document to the 2nd Generation MFRC Southeast Landscape Plan

August, 2014

Minnesota Forest Resources Council

Minnesota Forest Resources Council (MFRC)
Document #LT0814a

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User's Guide

The purpose of this document is to provide spatial data as a reference for the Minnesota Forest Resources Council's Landscape Program. Included in this document are maps and tables regarding forest management topics for the Southeast Landscape Region. When printed, the document is arranged with the maps on the left page and the tables regarding the map subject on the right page. This allows for easy side-by-side viewing of the maps and tables. In PDF format, the document contains bookmarks for easy navigation to map topics. Current geographical features are included on all maps (including presettlement land cover) to provide a spatial reference for the map user. Sources are provided for each map; more details regarding sources can be found in the bibliography at the end of the document.

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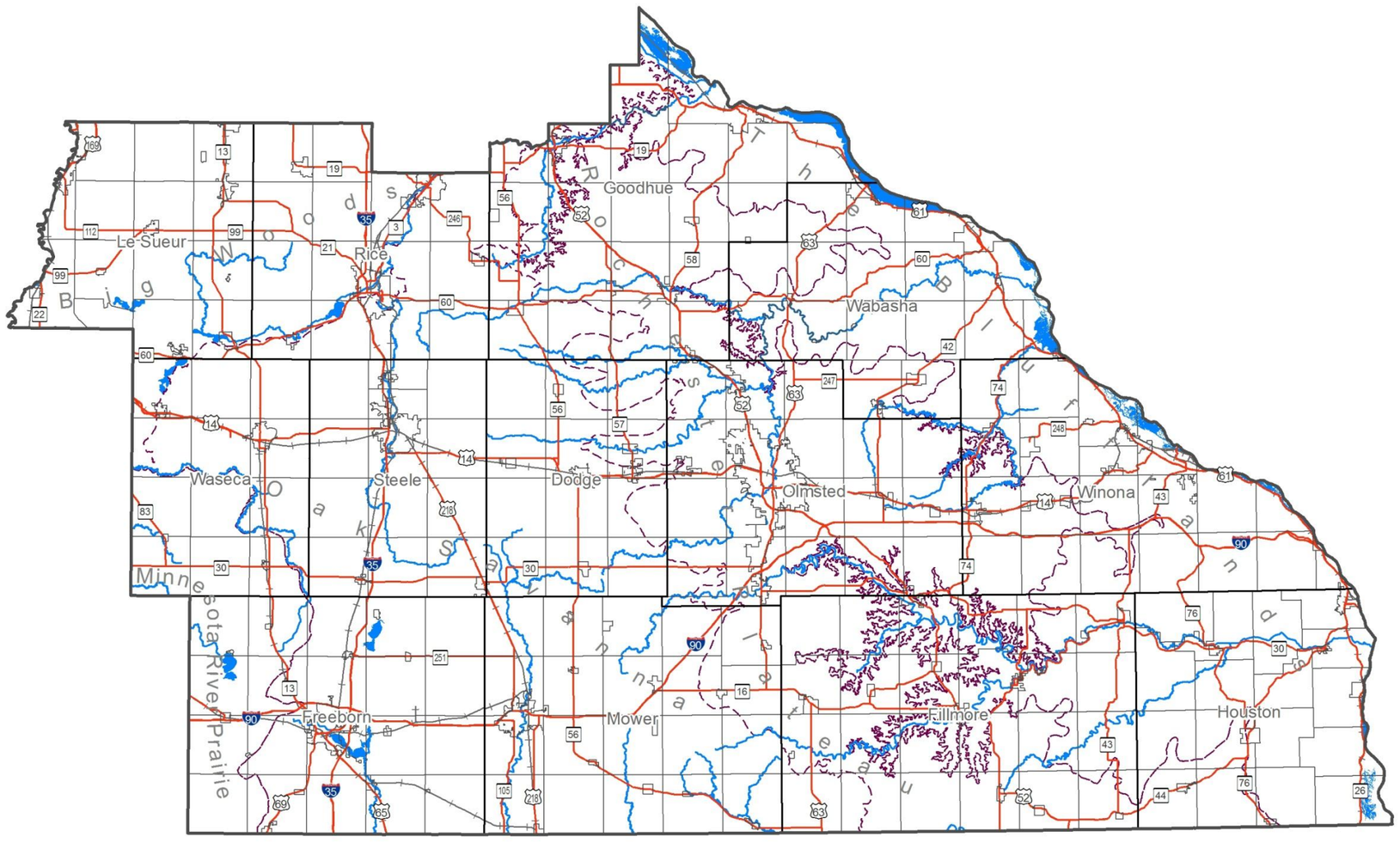
Political Boundaries

Southeast Landscape Region



Political Boundaries

- County Boundaries
- Municipal Boundaries

Other Features

- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

Miles
0 5 10 20 30 40

Sources: Political Boundaries - MNDNR Data Deli; Other Features - MNDNR Data Deli

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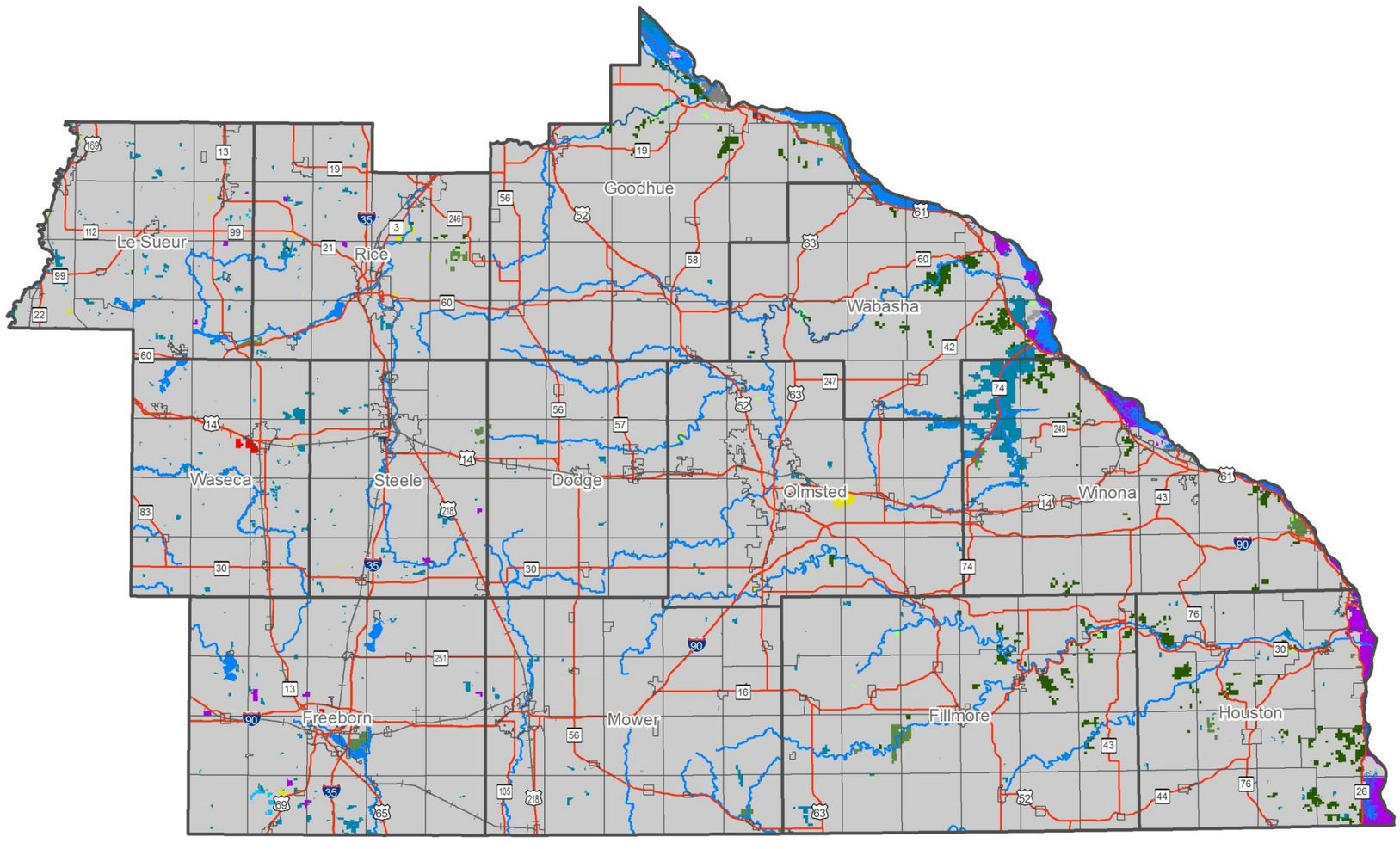
Political Boundaries Table

	Area		Municipal Divisions		
County	**Acres**	**% of Total**	**Cities**	**Townships**	**Total Municipal**
Dodge	281,164	5.6	7	12	**19**
Fillmore	551,460	11.1	14	23	**37**
Freeborn	461,960	9.3	14	20	**34**
Goodhue	499,093	10.0	10	21	**31**
Houston	363,942	7.3	7	17	**24**
Le Sueur	303,022	6.1	12	14	**26**
Mower	455,010	9.1	14	20	**34**
Olmsted	418,743	8.4	8	18	**26**
Rice	329,914	6.6	7	14	**21**
Steele	276,476	5.6	4	13	**17**
Wabasha	351,374	7.1	11	17	**28**
Waseca	276,947	5.6	5	12	**17**
Winona	410,324	8.2	13	19	**32**
Totals	**4,979,428**	**100.0**	**126**	**220**	**346**

Land Ownership (1976-2007)

Southeast Landscape Region



GAP Land Ownership

Federal
- Army Corps of Engineers
- Bureau of Indian Affairs
- U.S. Fish and Wildlife Service

Tribal
- Minnesota Chippewa Indians

State
- County Admin/State Forest
- County Admin/State Owned
- Division of Ecological Services
- Division of Fish and Wildlife
- Division of Forestry
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- State (Undifferentiated)

County
- County

Other Public
- Other Public

Private Conservancy
- Private Conservancy
- The Nature Conservancy

Other Private
- Other Private

Other Features
- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: GAP Land Ownership - MNDNR Data Deli; Other Features - MNDNR Data Deli

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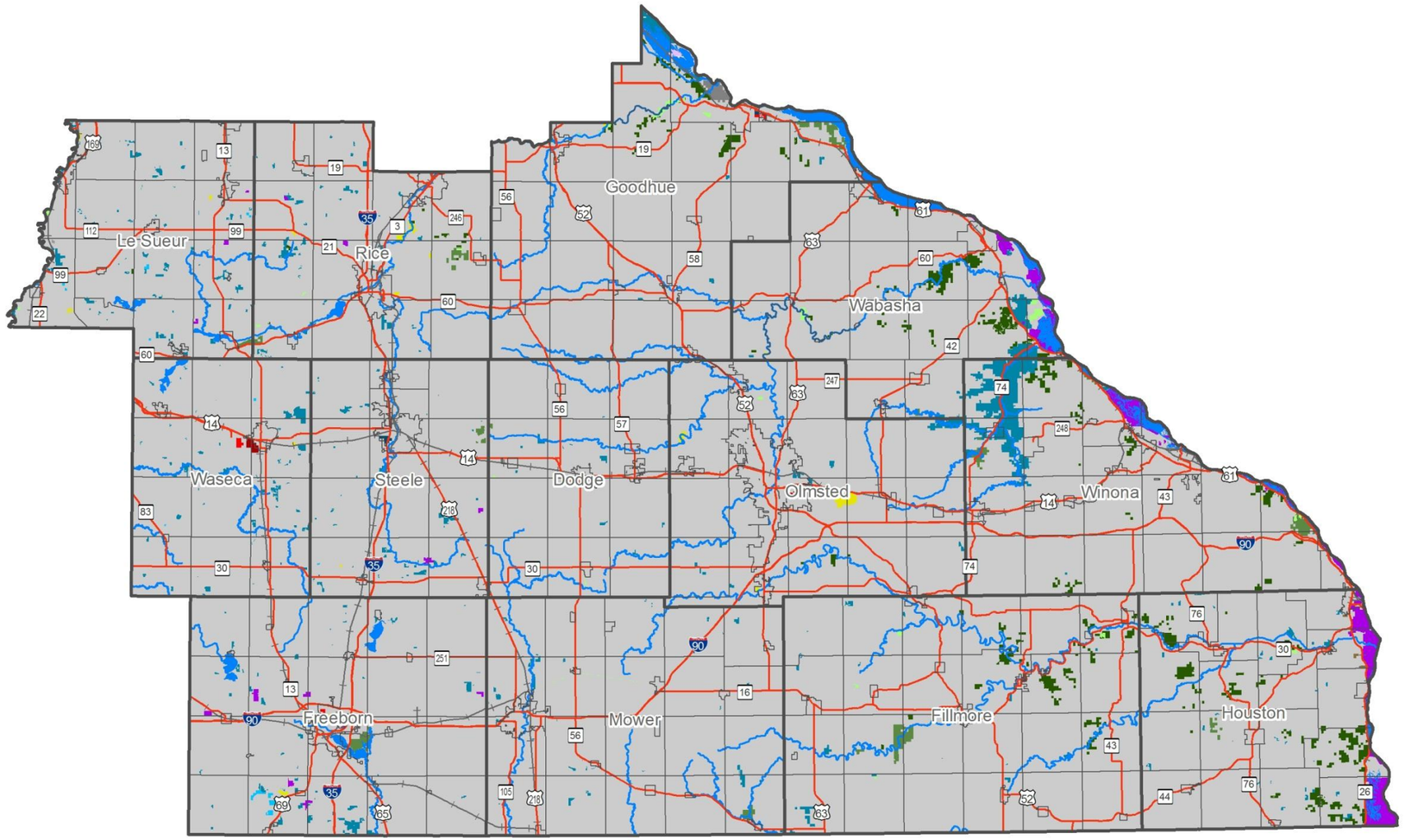
Land Ownership (1976-2007) Table

Ownership Type	Land Ownership	Acres	% of Total
Federal	Army Corps of Engineers	1,212	0.0
	Bureau of Indian Affairs	476	0.0
	U.S. Fish and Wildlife Service	38,334	0.8
Total Federal		**40,022**	**0.8**
State	County Admin/State Forest	41	0.0
	County Admin/State Owned	274	0.0
	Division of Ecological Services	3,420	0.1
	Division of Fish and Wildlife	67,336	1.4
	Division of Forestry	47,106	0.9
	Division of Parks and Recreation	14,639	0.3
	Division of Trails and Waterways	345	0.0
	Division of Waters	1,303	0.0
	State (Undifferentiated)	608	0.0
Total State		**135,073**	**2.7**
County	County	4,165	0.1
Total County		**4,165**	**0.1**
Other Public	Other Public	1,621	0.0
Total Other Public		**1,621**	**0.0**
Private Conservancy	Private Conservancy	2,307	0.0
	The Nature Conservancy	1,024	0.0
Total Private Conservancy		**3,332**	**0.1**
Total Public and Private Conservancy		**184,212**	**3.7**
Total Tribal	**Minnesota Chippewa Indians**	**330**	**0.0**
Total Private	**Private**	**4,794,887**	**96.3**
Total Southeast Region		**4,979,428**	**100.0**

Land Management (1976-2007)

Southeast Landscape Region



GAP Land Management

- Federal
- Army Corps of Engineers
- U.S. Fish and Wildlife Service
- State
- Division of Ecological Services
- Division of Fish and Wildlife
- Division of Forestry
- Division of Parks and Recreation
- Division of Trails and Waterways
- Division of Waters
- State of Minnesota
- County
- County
- Other Public
- Municipal
- University
- Private Conservancy
- Private Conservancy
- The Nature Conservancy
- Tribal
- Minnesota Chippewa Indians
- Minnesota Dakota (Sioux) Indians
- Private
- Private

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: GAP Land Management - MNDNR Data Deli; Other Features - MNDNR Data Deli

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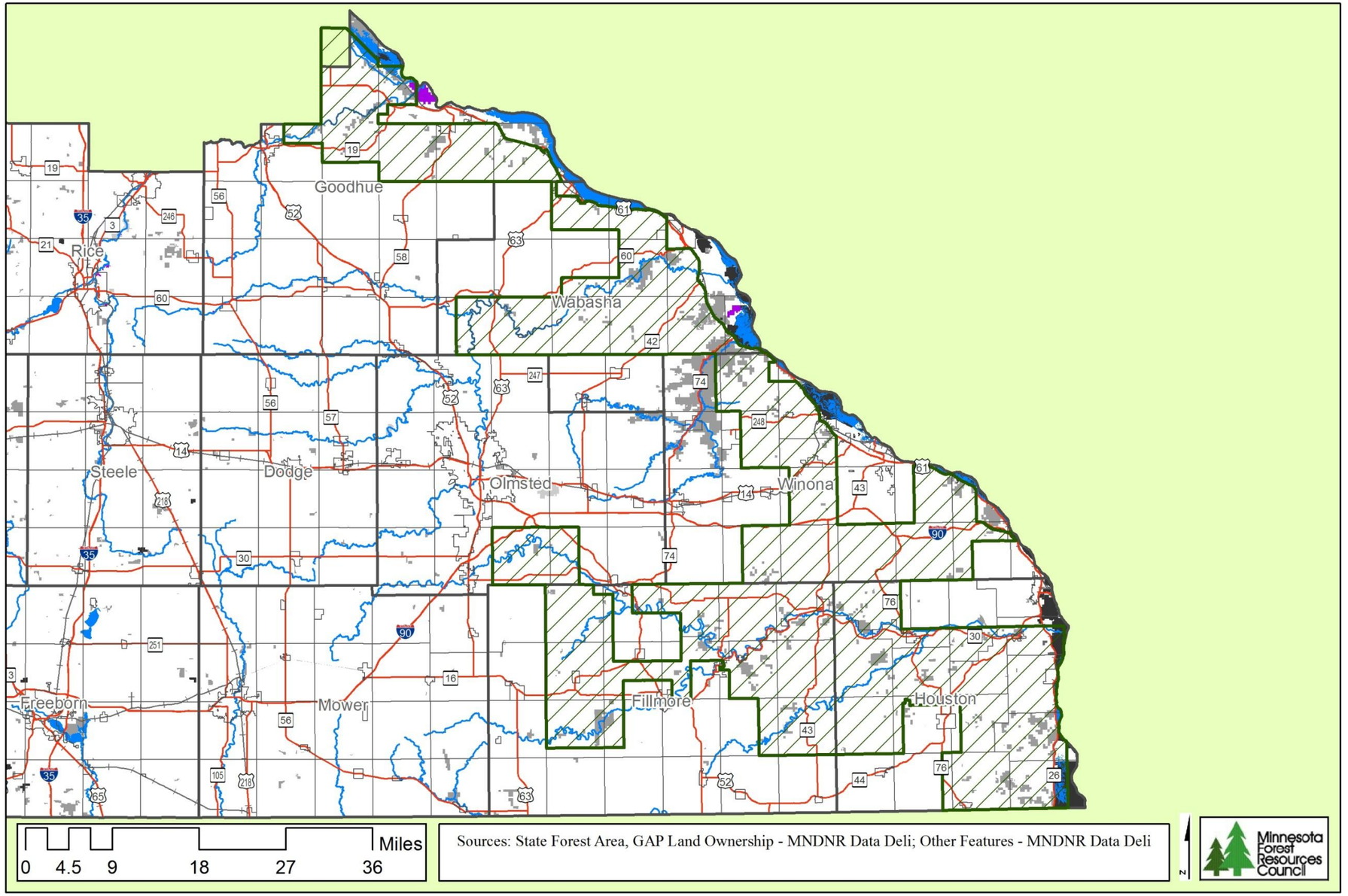
Minnesota Forest Resources Council

Land Management (1976-2007) Table

Management Type	Land Management	Acres	% of Total
Federal	Army Corps of Engineers	1,212	0.0
	U.S. Fish and Wildlife Service	38,334	0.8
Total Federal		**39,546**	**0.8**
State	Division of Ecological Services	4,336	0.1
	Division of Fish and Wildlife	67,336	1.4
	Division of Forestry	46,809	0.9
	Division of Parks and Recreation	14,639	0.3
	Division of Trails and Waterways	345	0.0
	Division of Waters	1,303	0.0
	State of Minnesota	608	0.0
Total State		**135,377**	**2.7**
County	Fillmore County	20	0.0
	Freeborn County	379	0.0
	Goodhue County	136	0.0
	Houston County	148	0.0
	Le Sueur County	352	0.0
	Olmsted County	1,893	0.0
	Rice County	1,121	0.0
	Steele County	38	0.0
	Wabasha County	80	0.0
	Waseca County	272	0.0
	Winona County	41	0.0
Total County		**4,480**	**0.1**
Other Public	Municipal	799	0.0
	University	822	0.0
Total Other Public		**1,621**	**0.0**
Private Conservancy	Private Conservancy	2,307	0.0
	The Nature Conservancy	405	0.0
Total Private Conservancy		**2,712**	**0.1**
Total Public and Private Conservancy		**183,736**	**3.7**
Tribal	Minnesota Chippewa Indians	330	0.0
	Minnesota Dakota (Sioux) Indians	476	0.0
Total Tribal		**806**	**0.0**
Total Private	**Private**	**4,794,887**	**96.3**
Total Southeast Region		**4,979,428**	**100.0**

Proclamation Areas

Southeast Landscape Region



Sources: State Forest Area, GAP Land Ownership - MNDNR Data Deli; Other Features - MNDNR Data Deli

Minnesota Forest Resources Council

R J D Memorial Hardwood State Forest Proclamation Area

GAP Land Ownership

- Federal
- Tribal
- State
- County
- Private Conservancy
- Private

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- Outside of Southeast Region

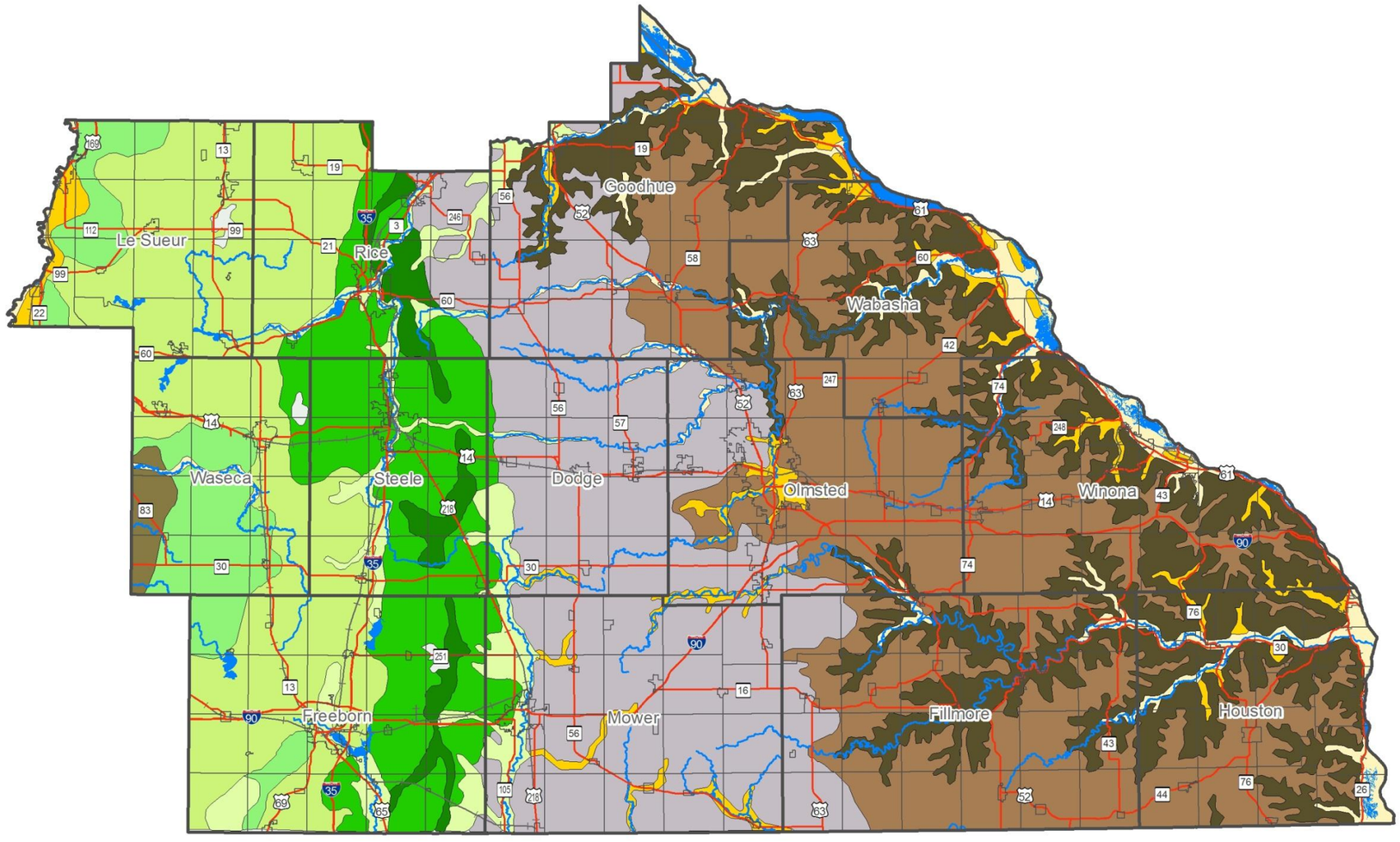
Proclamation Areas Table

R J D Memorial Hardwood	Acres	% of Total
Outside of Southeast Landscape Region	7,597	0.7
Within Southeast Landscape Region	1,008,630	99.3
Total Area for R J D Memorial Hardwood	**1,016,227**	**100.0**

Ownership in R J D Memorial Hardwood in Southeast Region	Acres	% of Total
Federal	8,359	0.8
Tribal	250	0.0
State	59,040	5.9
County	135	0.0
Private Conservancy	487	0.0
Private	940,359	93.2
Total Area for R J D Memorial Hardwood in Southeast Region	**1,008,630**	**100.0**

Quaternary Geology

Southeast Landscape Region



Quaternary Geology

- co - Colluvium (Holocene to Pleistocene)
- dag - Ground moraine
- das - Stagnation moraine
- dbe - End moraine
- dbg - Ground moraine
- dcg - Ground moraine
- dlc - Clay and clayey silt
- do - Outwash
- hal - Alluvium
- hp - Peat
- lr - Weathering Residuum over Bedrock (Pleistocene, Pre-Wisc
- pgd - Gray Drift (Pleistocene, Pre-Wisconsinan)
- td - Terraces (Holocene to Pleistocene)
- wat - Water

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Quaternary Geology - MN Geo; Other Features - MNDNR Data Deli

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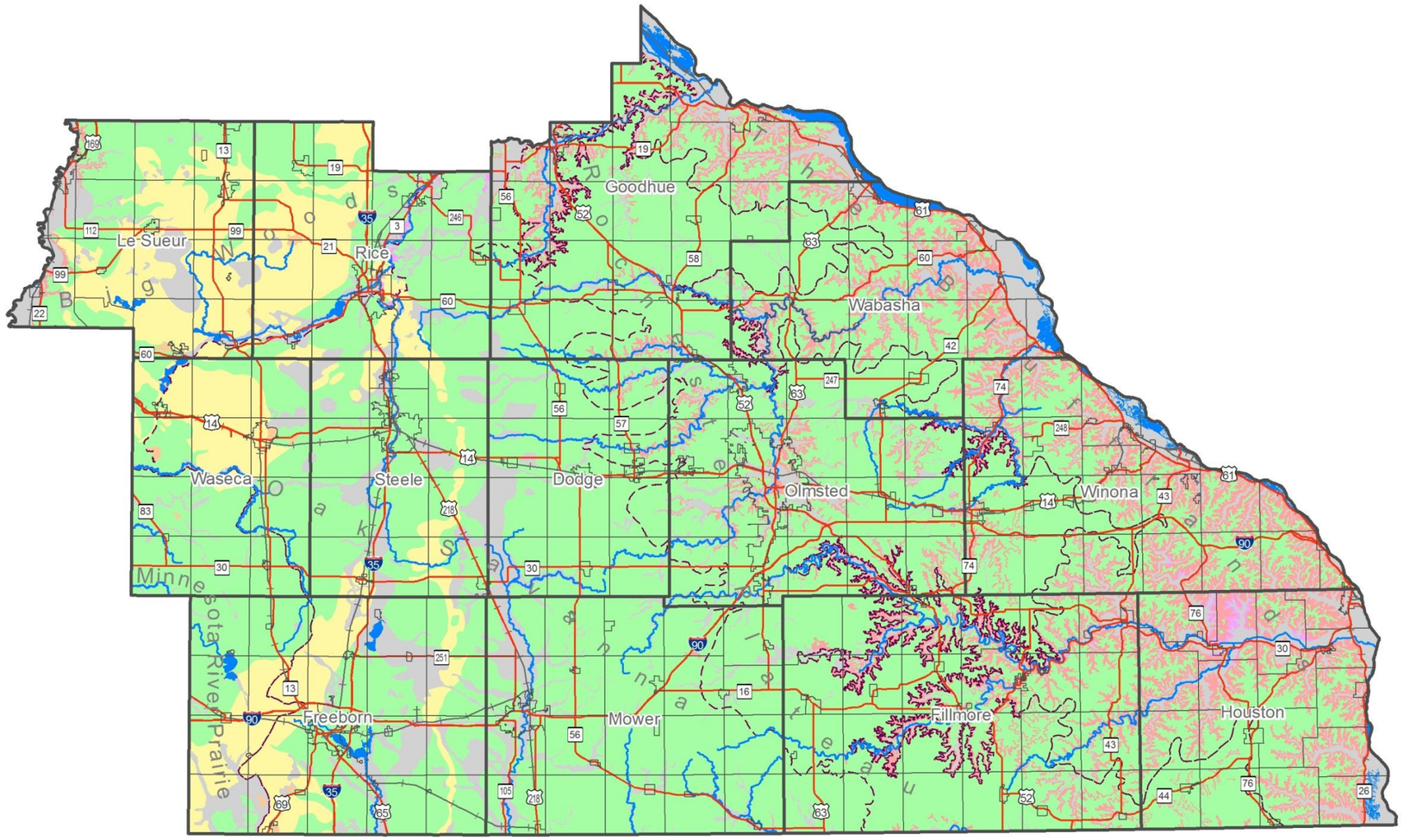
Quaternary Geology Table

Quaternary Geology	Acres	% of Total
co - Colluvium (Holocene to Pleistocene)	799,841	16.1
dag - Ground moraine	201,251	4.1
das - Stagnation moraine	719,701	14.5
dbe - End moraine	85,700	1.7
dbg - Ground moraine	420,403	8.5
dlc - Clay and clayey silt	28,791	0.6
do - Outwash	185,656	3.7
hal - Alluvium	179,446	3.6
hp - Peat	8,725	0.2
lr - Weathering Residuum over Bedrock (Pleistocene, Pre-Wisc	1,161,246	23.4
pgd - Gray Drift (Pleistocene, Pre-Wisconsinan)	1,036,252	20.9
td - Terraces (Holocene to Pleistocene)	129,461	2.6
wat - Water	10,825	0.2
Total Southeast Region	**4,967,298**	**100.0**

Landforms

Southeast Landscape Region



Landforms
- Level
- Rolling to Undulating
- Hummocky
- Inclined Slopes (Rolling-Steep)
- Steep
- Undifferentiated

Other Features
- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Landforms - MNDNR Data Deli; Other Features - MNDNR Data Deli

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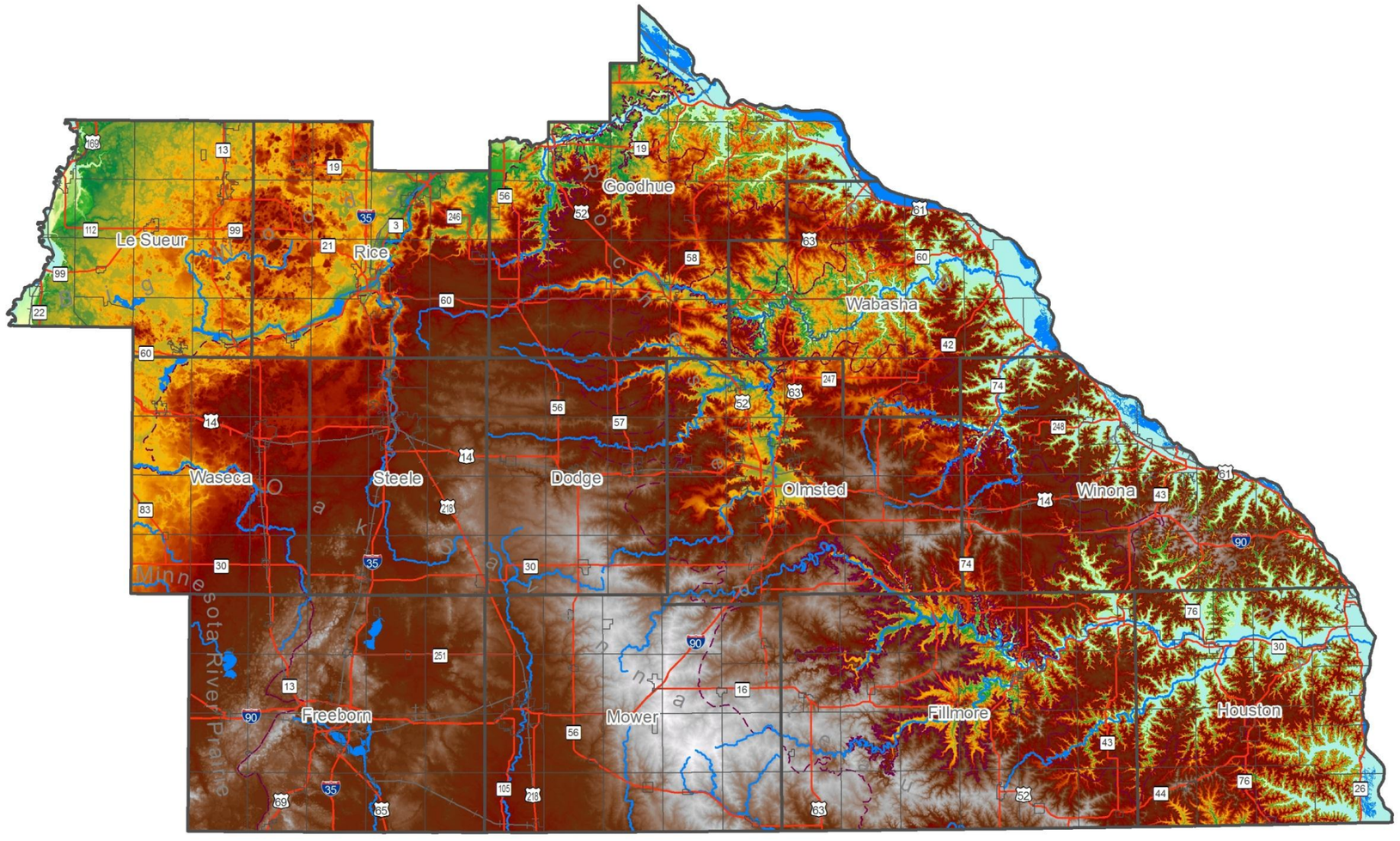
Landforms Table

Landforms	Acres	% of Total
Level	784,801	15.8
Rolling to Undulating	3,194,076	64.2
Hummocky	467,209	9.4
Inclined Slopes (Rolling-Steep)	10,812	0.2
Steep	506,184	10.2
Undifferentiated	15,395	0.3
Total Southeast Region	**4,978,476**	**100.0**

Topography

Southeast Landscape Region



Elevation (Feet)

High : 1440

Low : 623

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Elevation - MNDNR Data Deli; Other Features - MNDNR Data Deli

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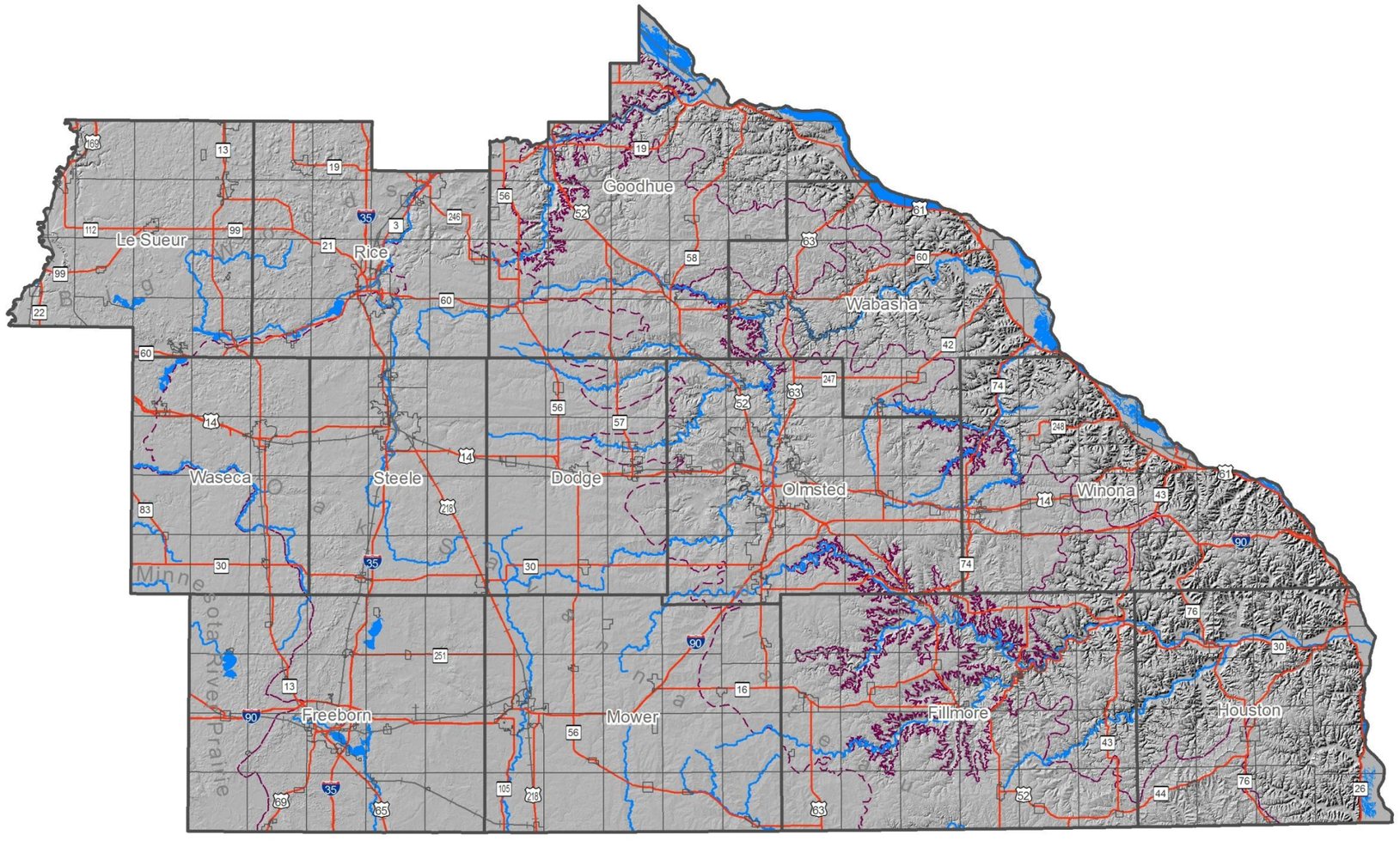
Shaded Relief

Southeast Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Shaded Relief - MNDNR Data Deli; Other Features - MNDNR Data Deli

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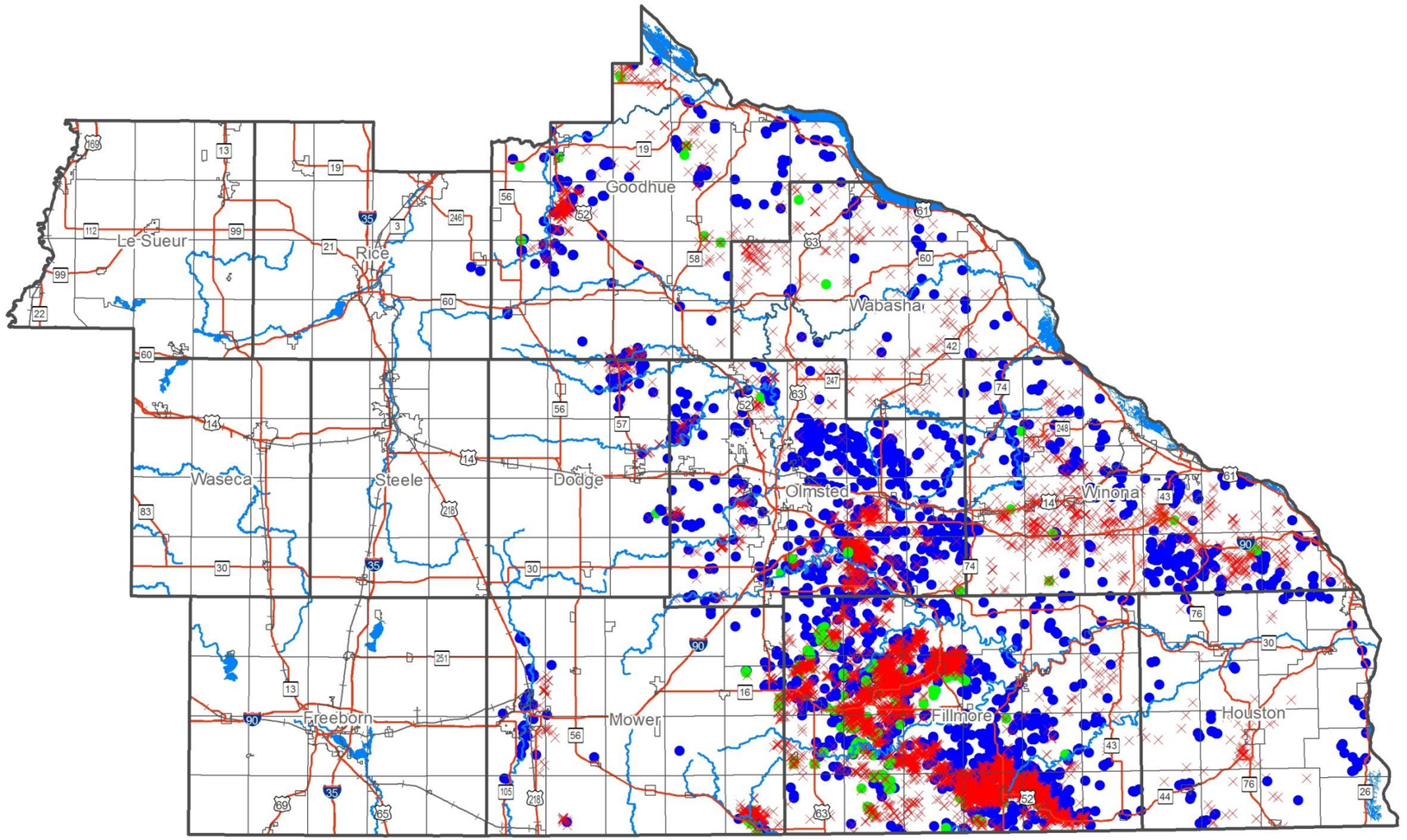
Karst Features

Southeast Landscape Region



Karst Feature Inventory Points

- Spring
- Stream Sink
- Sinkhole

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Karst Feature Inventory Points - MNDNR Data Deli; Other Features - MNDNR Data Deli

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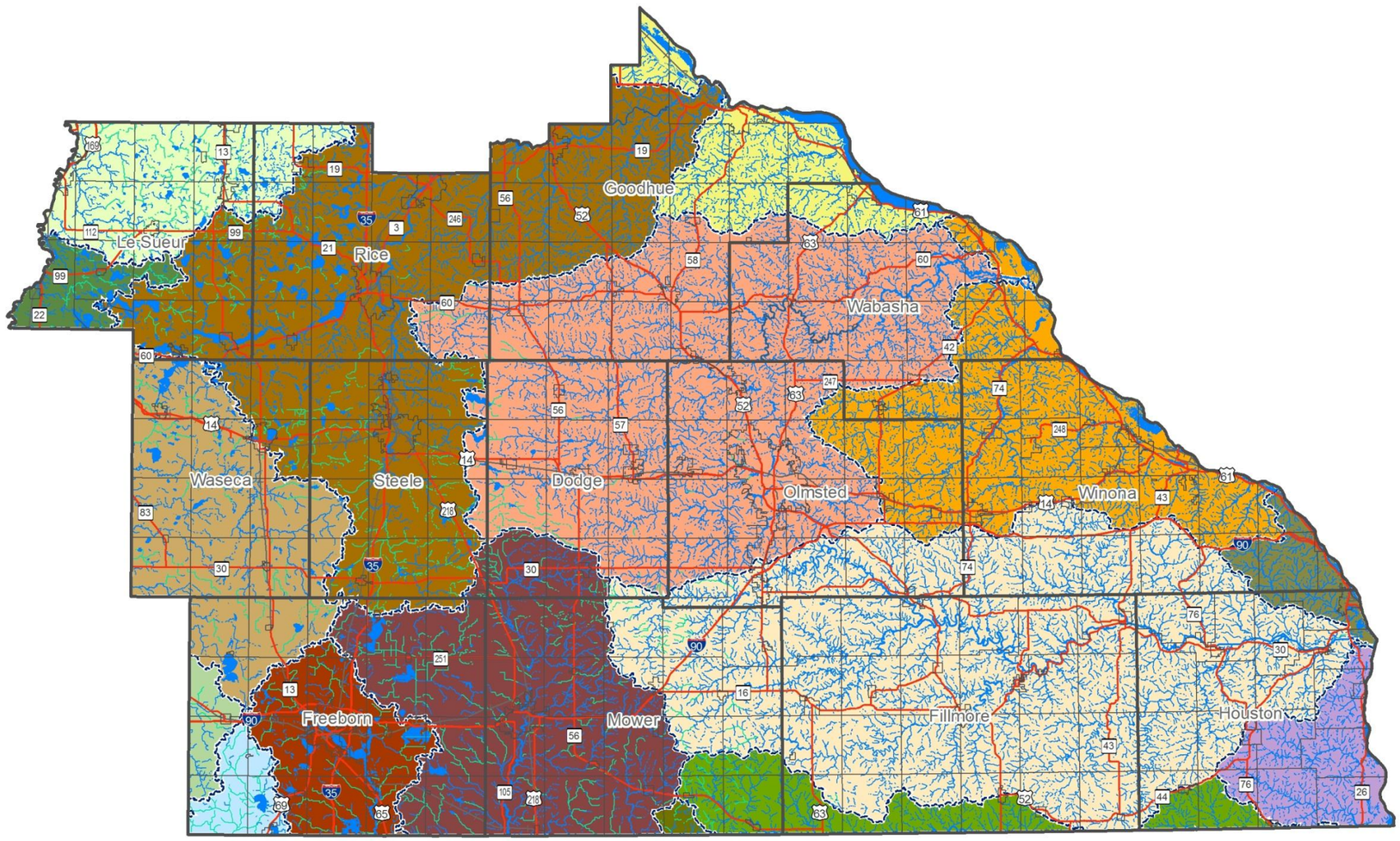
Major Watersheds

Southeast Landscape Region



Water Features

- Lake, Pond or Reservoir; River or Stream; Innundation Area or Intermittent Water
- River
- Stream (Perennial)
- Stream (Intermittent)
- Drainage Ditch (Perennial)
- Drainage Ditch (Intermittent)

DNR Level 04 - HUC 08 - Majors

- Blue Earth River
- Cannon River
- Cedar River
- Le Sueur River
- Lower Minnesota River
- Minnesota River - Mankato
- Mississippi River - La Crescent
- Mississippi River - Lake Pepin
- Mississippi River - Reno
- Mississippi River - Winona
- Root River
- Shell Rock River
- Upper Iowa River
- Upper Wapsipinicon River
- Winnebago River
- Zumbro River

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads

0 5 10 20 30 40 Miles

Sources: Water Features & Watersheds - MNDNR Data Deli; Other Features - MNDNR Data Deli

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Major Watersheds Tables

Major Watershed	Acres	% of Total
Blue Earth River	31,858	0.6
Cannon River	841,942	16.9
Cedar River	454,031	9.1
Le Sueur River	320,320	6.4
Lower Minnesota River	184,705	3.7
Minnesota River - Mankato	55,809	1.1
Mississippi River - La Crescent	60,544	1.2
Mississippi River - Lake Pepin	172,769	3.5
Mississippi River - Reno	117,448	2.4
Mississippi River - Winona	419,201	8.4
Root River	1,061,510	21.3
Shell Rock River	157,702	3.2
Upper Iowa River	138,757	2.8
Upper Wapsipinicon River	8,264	0.2
Winnebago River	45,201	0.9
Zumbro River	909,367	18.3
Total Southeast Region	**4,979,428**	**100.0**

DNR Hydrography Water Features	Acres	% of Total
Lake, Pond or Reservoir; River or Stream; Innundation Area or Intermittent Water	112,615	2.3

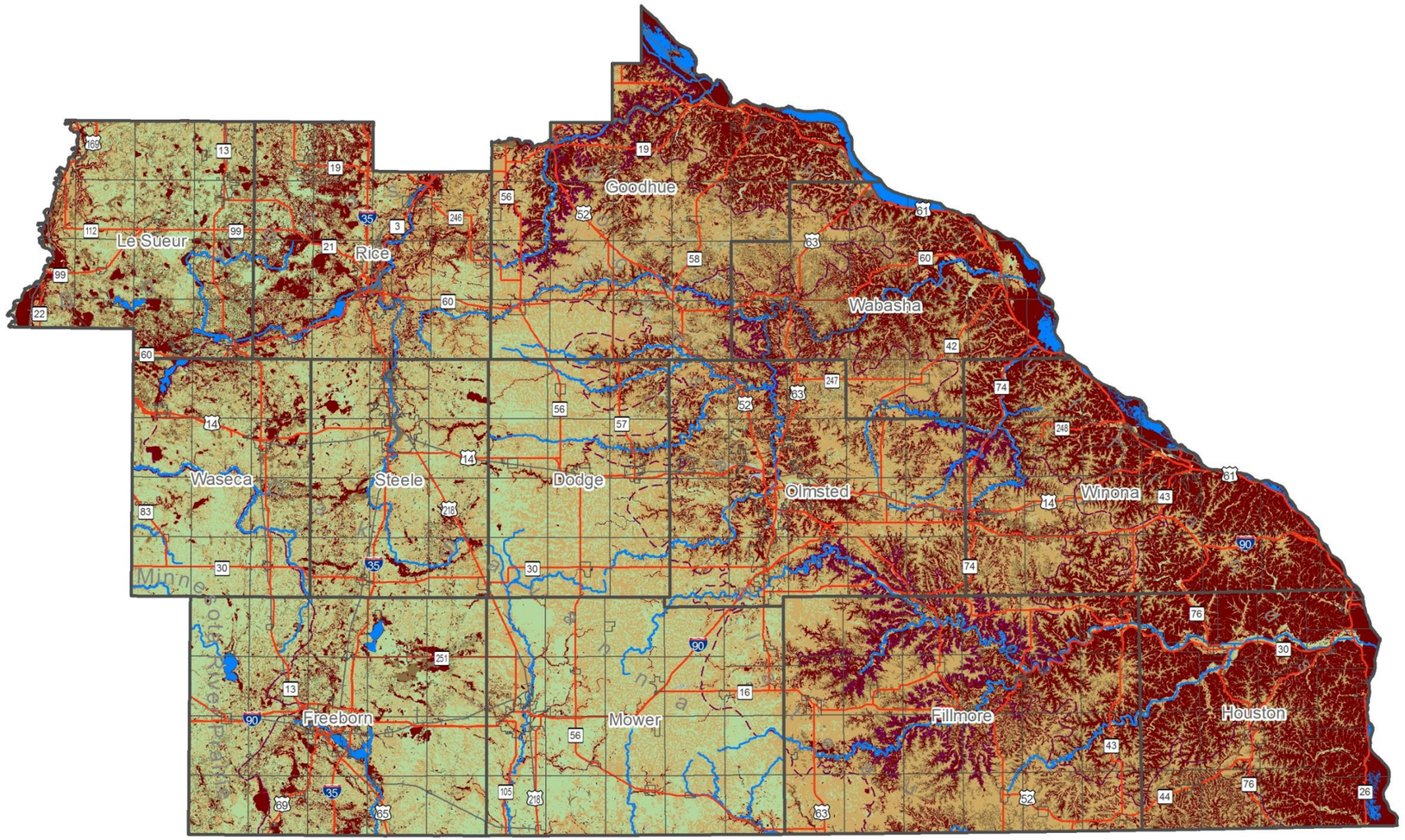
Streams (displayed in map)	Miles
Centerline (River)	360.0
Connector (River)	21.3
Stream (Perennial)	2,772.5
Stream (Intermittent)	9,233.7
Drainage Ditch (Perennial)	560.8
Drainage Ditch (Intermittent)	831.4
Total Southeast Region	**13,779.5**

Streams (not displayed in map)	Miles
Aquaduct (Elevated or Tunnel)	1.0
Arbitrary Overland Flow Connector	0.2
Connector (Lake)	569.1
Connector (Wetland)	102.6
Drainage Ditch (Undifferentiated)	13.7
Interpreted Arc Connector	38.6
Stream (Underground)	0.6
Stream (Unknown)	5.7
Superceded Natural Channel	19.1
Total Southeast Region	**750.5**

Stream Density (total miles/square mile)	1.87

Soils - Farmland Class

Southeast Landscape Region



SSURGO Soils - Farmland Class

- All areas are prime farmland
- Farmland of statewide importance
- Farmland of local importance
- Not prime farmland
- Prime farmland if drained
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if protected from flooding or not frequently flooded during the growing season

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Soils - NRCS Web Soil Survey; Other Features - MNDNR Data Deli

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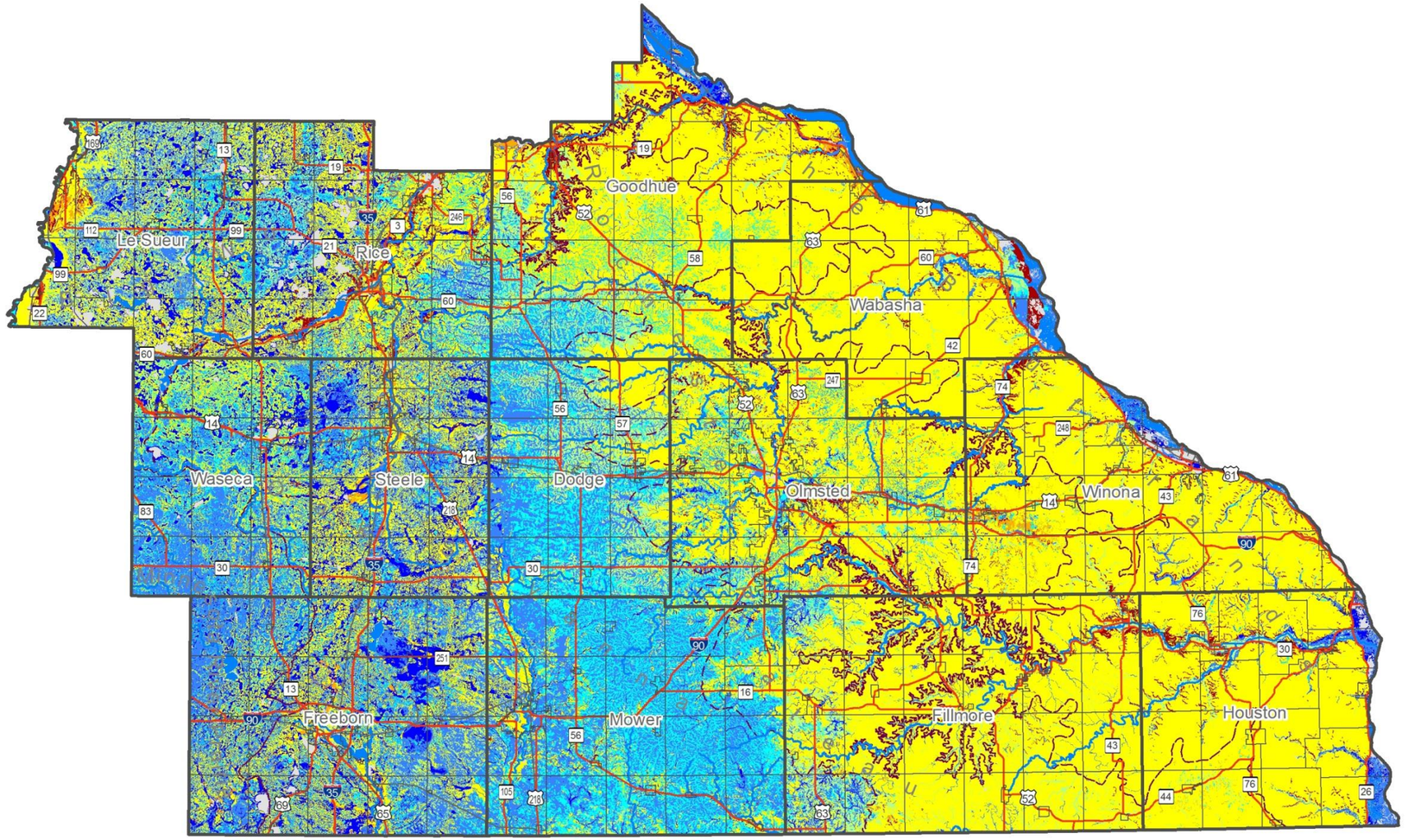
Soils - Farmland Class Table

SSURGO Farmland Class	Acres	% of Total
All areas are prime farmland	1,855,223	37.3
Farmland of statewide importance	762,493	15.3
Farmland of local importance	0	0.0
Not prime farmland	1,274,385	25.6
Prime farmland if drained	1,062,941	21.3
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	5,167	0.1
Prime farmland if protected from flooding or not frequently flooded during the growing season	18,859	0.4
Total Southeast Region	**4,979,068**	**100.0**

Soils - Drainage Class

Southeast Landscape Region



Sources: Soils - NRCS Web Soil Survey; Other Features - MNDNR Data Deli

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SSURGO Soils - Drainage Class

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Not rated or not available

Other Features

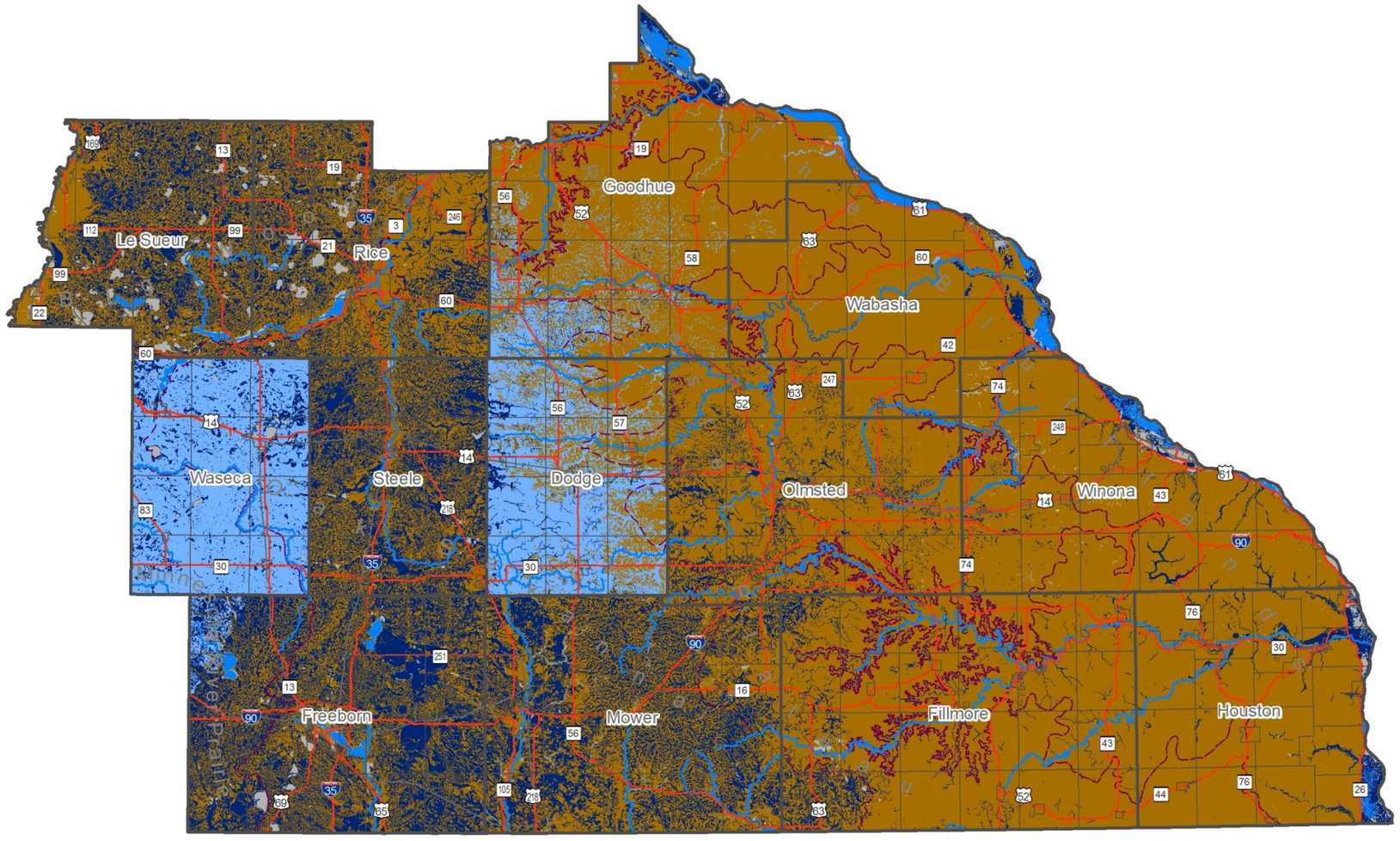
- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

Soils - Drainage Class Table

SSURGO Drainage Class	Acres	% of Total
Excessively drained	104,169	2.1
Somewhat excessively drained	40,608	0.8
Well drained	2,556,456	51.3
Moderately well drained	408,202	8.2
Somewhat poorly drained	480,718	9.7
Poorly drained	991,680	19.9
Very poorly drained	275,347	5.5
Not rated or not available	121,889	2.4
Total Southeast Region	**4,979,068**	**100.0**

Soils - Hydric Rating

Southeast Landscape Region



SSURGO Soils - Hydric Rating

- All Hydric
- Partially Hydric
- Not Hydric
- Unknown Hydric

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Soils - NRCS Web Soil Survey; Other Features - MNDNR Data Deli

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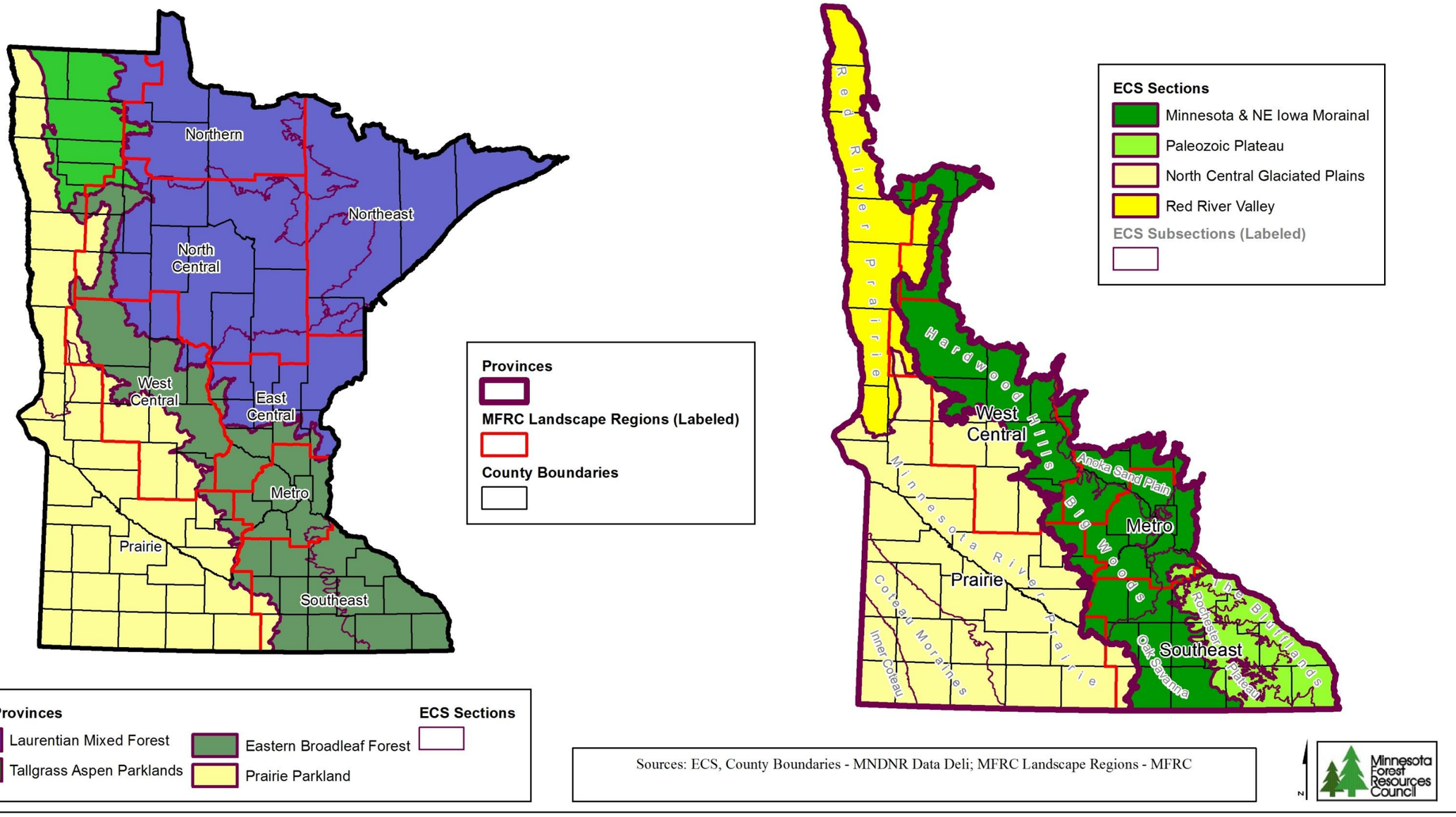
Soils - Hydric Rating Table

SSURGO Hydric Rating	Acres	% of Total
All Hydric	1,016,299	20.4
Partially Hydric	486,282	9.8
Not Hydric	3,353,136	67.3
Unknown Hydric	123,351	2.5
Total Southeast Region	**4,979,068**	**100.0**

ECS Provinces, Sections, and Subsections

Southeast Landscape Region



Sources: ECS, County Boundaries - MNDNR Data Deli; MFRC Landscape Regions - MFRC

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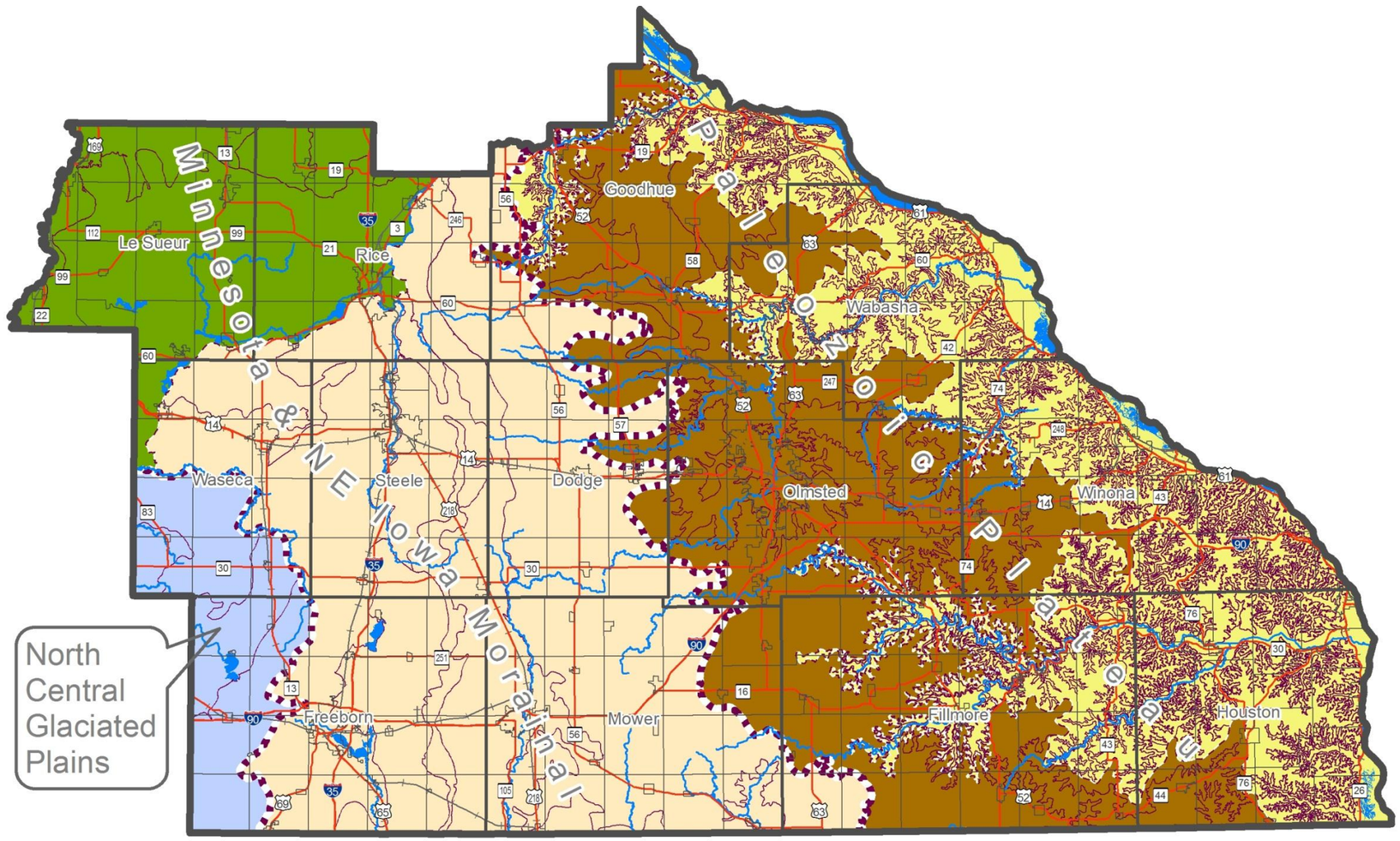
ECS Provinces, Sections, and Subsections Table

ECS Provinces	ECS Section	ECS Subsection	Acres in Region	% of Region	# of LTAs in Region
Eastern Broadleaf Forest	Minnesota & NE Iowa Morainal	Big Woods	505,461	10.2	5
		Oak Savanna	1,645,020	33.0	9
	Subtotal (Section)		**2,150,480**	**43.2**	**14**
	Paleozoic Plateau	Rochester Plateau	1,298,940	26.1	5
		The Blufflands	1,278,527	25.7	11
	Subtotal (Section)		**2,577,467**	**51.8**	**16**
Subtotal (Province)			**4,727,947**	**94.9**	**30**
Prairie Parkland	North Central Glaciated Plains	Minnesota River Prairie	251,481	5.1	4
	Subtotal (Section)		**251,481**	**5.1**	**4**
Subtotal (Province)			**251,481**	**5.1**	**4**
Total Southeast Region			**4,979,428**	**100.0**	**34**

ECS Sections, Subsections, and Land Type Associations

Southeast Landscape Region



ECS

- ECS Sections (Labeled)
- ECS Subsections
- ECS Land Type Associations

ECS Subsections by ECS Sections

- Minnesota & NE Iowa Morainal
- Big Woods
- Oak Savanna
- Paleozoic Plateau
- Rochester Plateau
- The Blufflands
- North Central Glaciated Plains
- Minnesota River Prairie

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: ECS - MNDNR Data Deli; Other Features - MNDNR Data Deli

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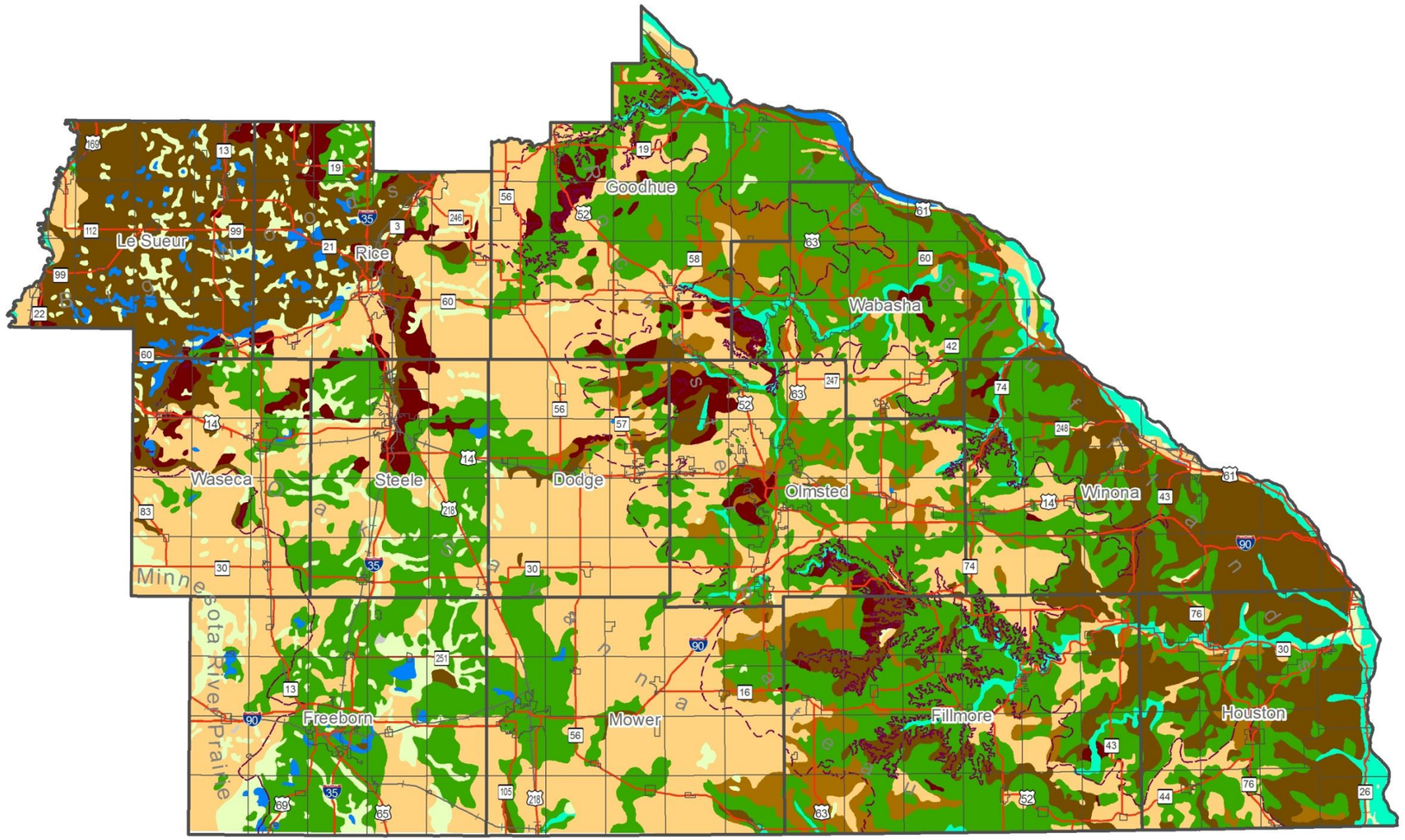
Minnesota Forest Resources Council

ECS Sections, Subsections, and Land Type Associations Table

Section	Subsection	Land Type Association	Acres in Region	% of Region
Minnesota & NE Iowa Morainal	Big Woods	Cordova Moraine	387,424	7.8
		Elko Moraine	24,662	0.5
		Hamburg Moraine	45,140	0.9
		Le Sueur Alluvial Plain	23,616	0.5
		Maple Plain Moraine	24,619	0.5
	Subtotal (Subsection)		**505,461**	**10.2**
	Oak Savanna	Blooming Prairie Till Plain	207,025	4.2
		Coates Sand Plain	58	0.0
		Havanna Moraine	85,170	1.7
		Hayfield Till Plain	661,642	13.3
		Iosco Moraine	62,714	1.3
		Le Roy Till Plain	69,024	1.4
		Lemond Moraine	370,840	7.4
		Lerdal Moraine	135,327	2.7
		Litomysl Moraine	53,217	1.1
	Subtotal (Subsection)		**1,645,020**	**33.0**
Subtotal (Section)			**2,150,480**	**43.2**
Paleozoic Plateau	Rochester Plateau	Chester Ridge	378,932	7.6
		Goodhue Plain	34,366	0.7
		Hampton Till Plain	20,193	0.4
		Lewiston Plain	345,569	6.9
		Stewartville Plain	519,879	10.4
	Subtotal (Subsection)		**1,298,940**	**26.1**
	The Blufflands	Alluvial Plain	115,591	2.3
		Altura Ridgetops	393,764	7.9
		Brownsville Slopes	148,032	3.0
		Caledonia Ridgetops	141,404	2.8
		Cannon River Valley	14,282	0.3
		Elba Slopes	282,822	5.7
		Mississippi River Valley	118,810	2.4
		Money Creek Hills	13,241	0.3
		Root River Valley	30,294	0.6
		Whitewater River Valley	6,360	0.1
		Zumbro River Valley	13,928	0.3
	Subtotal (Subsection)		**1,278,527**	**25.7**
Subtotal (Section)			**2,577,467**	**51.8**
North Central Glaciated Plains	Minnesota River Prairie	Amboy Moraine	18,714	0.4
		Gibbon Till Plain	60,034	1.2
		Keister Moraine	93,991	1.9
		Pemberton Moraine	78,742	1.6
	Subtotal (Subsection)		**251,481**	**5.1**
Subtotal (Section)			**251,481**	**5.1**
Total Southeast Region			**4,979,428**	**100.0**

Presettlement Land Cover (1895)

Southeast Landscape Region



Presettlement Land Cover (Marschner's)

- Aspen-Oak Land
- Big Woods - Hardwoods (oak, maple, basswood, hickory)
- Brush Prairie
- Oak openings and barrens
- Prairie
- River Bottom Forest
- Wet Prairie
- Lakes (open water)
- Undefined

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

Note: Current political boundaries and roads are displayed to provide a spatial reference for Presettlement Land Cover data.

0 5 10 20 30 40 Miles

Sources: Presettlement Land Cover - MNDNR Data Deli; Other Features - MNDNR Data Deli

N

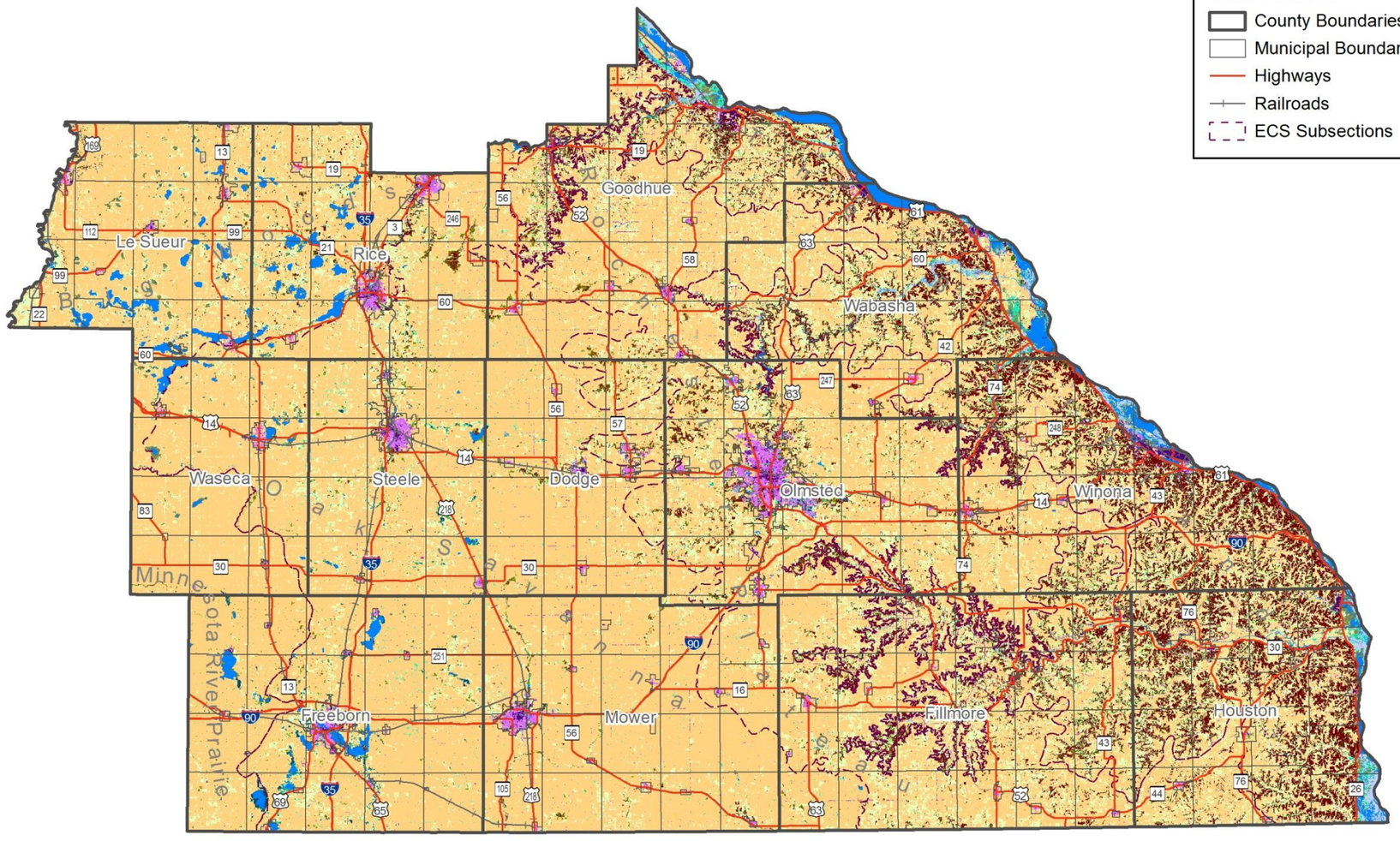
Minnesota Forest Resources Council

Presettlement Land Cover (1895) Table

Comparative Class	Presettlement Land Cover (Marschner's)	Acres	% of Total
Upland Forest	Aspen-Oak Land	157,930	3.2
	Big Woods - Hardwoods (oak, maple, basswood, hickory)	896,907	18.0
Subtotal (Upland Forest)		**1,054,837**	**21.2**
Upland Shrub	Brush Prairie	224,998	4.5
Subtotal (Upland Shrub)		**224,998**	**4.5**
Upland Grass	Oak openings and barrens	1,620,956	32.6
	Prairie	1,607,516	32.3
Subtotal (Upland Grass)		**3,228,472**	**64.8**
Lowland Vegetation	River Bottom Forest	129,542	2.6
	Wet Prairie	260,682	5.2
Subtotal (Lowland Vegetation)		**390,224**	**7.8**
Open Water	Lakes (open water)	56,754	1.1
Subtotal (Open Water)		**56,754**	**1.1**
Unclassified	Undefined	24,144	0.5
Subtotal (Unclassified)		**24,144**	**0.5**
Total Southeast Region		**4,979,428**	**100.0**

Land Cover (1992)

Southeast Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

GAP Level 4

- Aspen/White Birch
- Bur/White Oak
- Maple/Basswood
- Red Oak
- Red Pine
- Red/White Pine
- Red/White Pine-Deciduous mix
- Redcedar
- Redcedar-Deciduous mix
- Upland Deciduous
- White Pine mix
- White/Red Oak
- Upland Shrub
- Grassland
- Broadleaf Sedge/Cattail
- Cottonwood
- Floating Aquatic
- Lowland Deciduous
- Lowland Deciduous Shrub
- Sedge Meadow
- Silver Maple
- Tamarack
- Cropland
- Water
- Barren
- Low intensity urban
- Transportation
- High intensity urban
- Unidentified

0 5 10 20 30 40 Miles

Sources: GAP Land Cover - MNDNR Data Deli; Other Features - MNDNR Data Deli

N

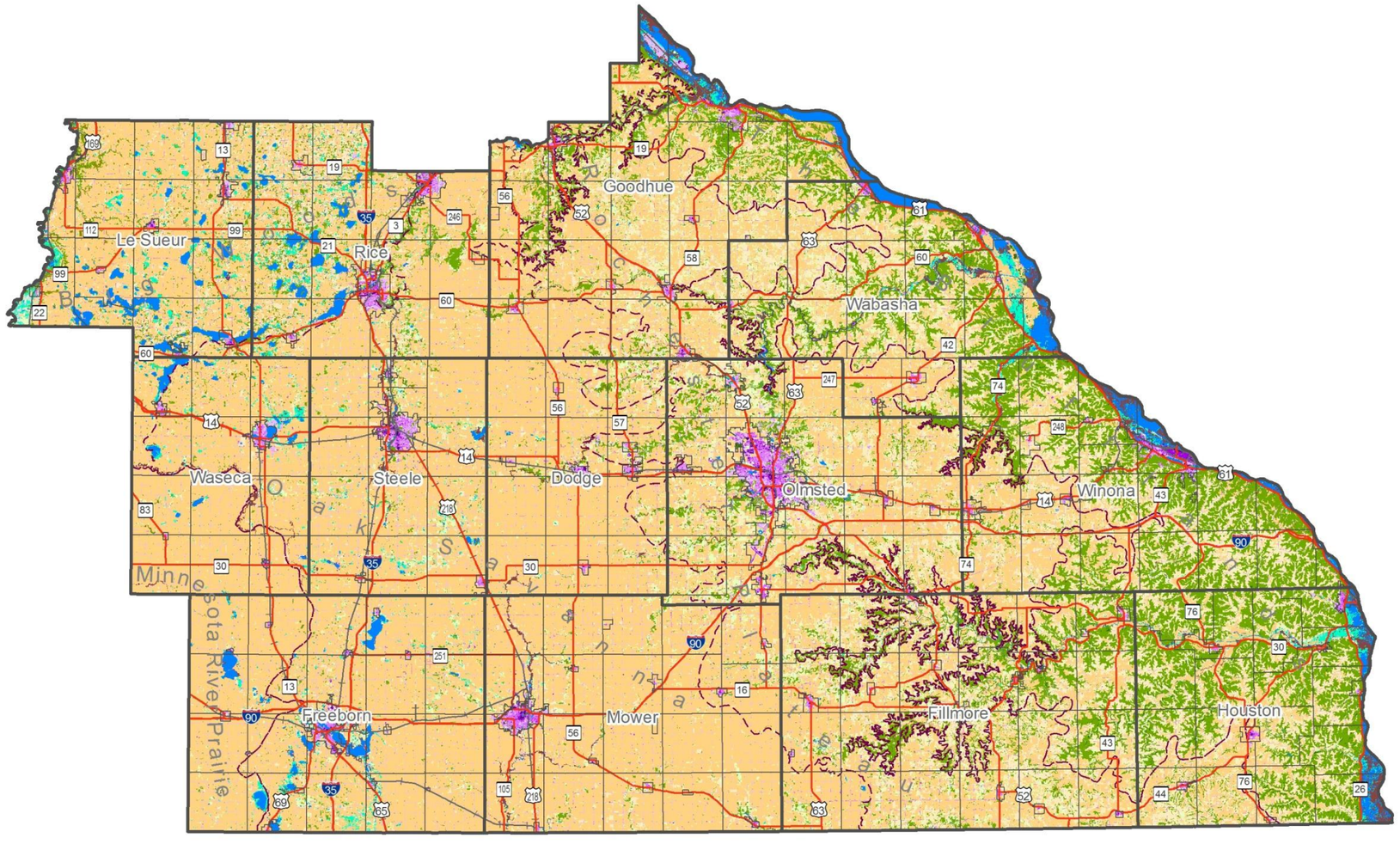
Minnesota Forest Resources Council

Land Cover (1992) Table

Comparative Class	GAP Level 4	Acres	% of Total
Upland Forest	Aspen/White Birch	202	0.0
	Bur/White Oak	41,428	0.8
	Maple/Basswood	17,410	0.3
	Red Oak	288,369	5.8
	Red Pine	2,399	0.0
	Red/White Pine	486	0.0
	Red/White Pine-Deciduous mix	1,136	0.0
	Redcedar	1,529	0.0
	Redcedar-Deciduous mix	5,311	0.1
	Upland Deciduous	13,504	0.3
	White Pine mix	785	0.0
	White/Red Oak	97,308	2.0
Subtotal (Upland Forest)		**469,866**	**9.4**
Upland Shrub	Upland Shrub	33,003	0.7
Subtotal (Upland Shrub)		**33,003**	**0.7**
Upland Grass	Grassland	834,838	16.8
Subtotal (Upland Grass)		**834,838**	**16.8**
Lowland Vegetation	Broadleaf Sedge/Cattail	23,353	0.5
	Cottonwood	1,342	0.0
	Floating Aquatic	1,024	0.0
	Lowland Deciduous	62,272	1.3
	Lowland Deciduous Shrub	25,525	0.5
	Sedge Meadow	11,145	0.2
	Silver Maple	23,074	0.5
	Tamarack	8	0.0
Subtotal (Lowland Vegetation)		**147,744**	**3.0**
Agriculture	Cropland	3,291,895	66.1
Subtotal (Agriculture)		**3,291,895**	**66.1**
Open Water	Water	91,037	1.8
Subtotal (Open Water)		**91,037**	**1.8**
Barren	Barren	121	0.0
Subtotal (Barren)		**121**	**0.0**
Developed	Low intensity urban	56,845	1.1
	Transportation	28,932	0.6
	High intensity urban	25,118	0.5
Subtotal (Developed)		**110,896**	**2.2**
Unclassified	Unidentified	29	0.0
Subtotal (Unclassified)		**29**	**0.0**
Total Southeast Region		**4,979,428**	**100.0**

Land Cover (2001)

Southeast Landscape Region



National Land Cover Dataset 2001

- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Woody Wetlands
- Emergent Herbaceous Wetlands
- Cultivated Crops
- Open Water
- Barren Land (Rock/Sand/Clay)
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Unclassified

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

Miles
0 5 10 20 30 40

Sources: National Land Cover Dataset - MRLC; Other Features - MNDNR Data Deli

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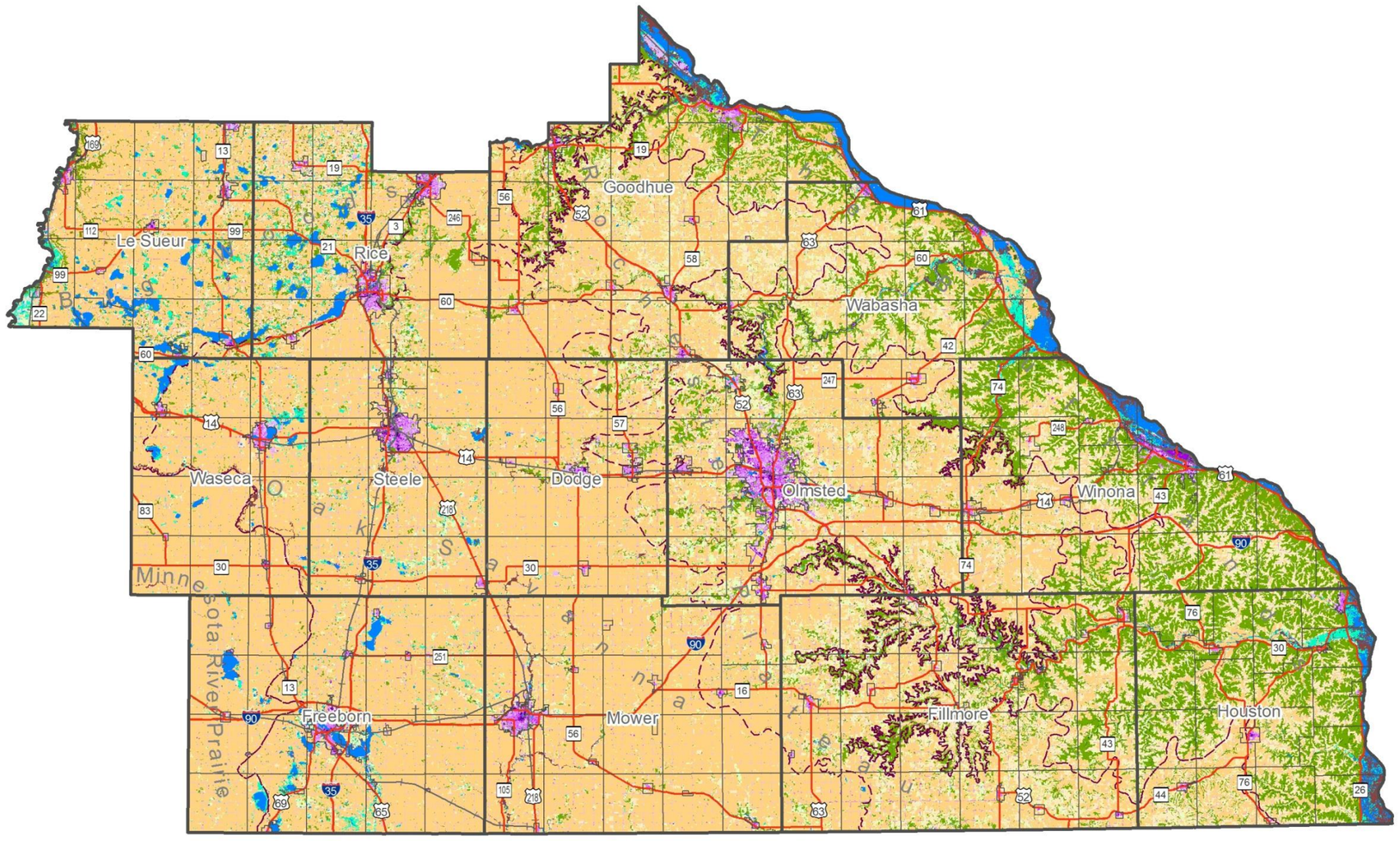
Minnesota Forest Resources Council

Land Cover (2001) Table

Comparative Class	National Land Cover Dataset 2001	Acres	% of Total
Upland Forest	Deciduous Forest	662,880	13.3
	Evergreen Forest	9,868	0.2
	Mixed Forest	616	0.0
Subtotal (Upland Forest)		**673,365**	**13.5**
Upland Shrub	Shrub/Scrub	10,759	0.2
Subtotal (Upland Shrub)		**10,759**	**0.2**
Upland Grass	Grassland/Herbaceous	400,996	8.1
	Pasture/Hay	602,659	12.1
Subtotal (Upland Grass)		**1,003,655**	**20.2**
Lowland Vegetation	Woody Wetlands	55,792	1.1
	Emergent Herbaceous Wetlands	59,795	1.2
Subtotal (Lowland Vegetation)		**115,586**	**2.3**
Agriculture	Cultivated Crops	2,709,445	54.4
Subtotal (Agriculture)		**2,709,445**	**54.4**
Open Water	Open Water	104,064	2.1
Subtotal (Open Water)		**104,064**	**2.1**
Barren	Barren Land (Rock/Sand/Clay)	3,214	0.1
Subtotal (Barren)		**3,214**	**0.1**
Developed	Developed, Open Space	246,238	4.9
	Developed, Low Intensity	88,100	1.8
	Developed, Medium Intensity	18,751	0.4
	Developed, High Intensity	6,250	0.1
Subtotal (Developed)		**359,339**	**7.2**
Total Southeast Region		**4,979,428**	**100.0**

Land Cover (2006)

Southeast Landscape Region



National Land Cover Dataset 2006

- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Woody Wetlands
- Emergent Herbaceous Wetlands
- Cultivated Crops
- Open Water
- Barren Land (Rock/Sand/Clay)
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Unclassified

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: National Land Cover Dataset - MRLC; Other Features - MNDNR Data Deli

N

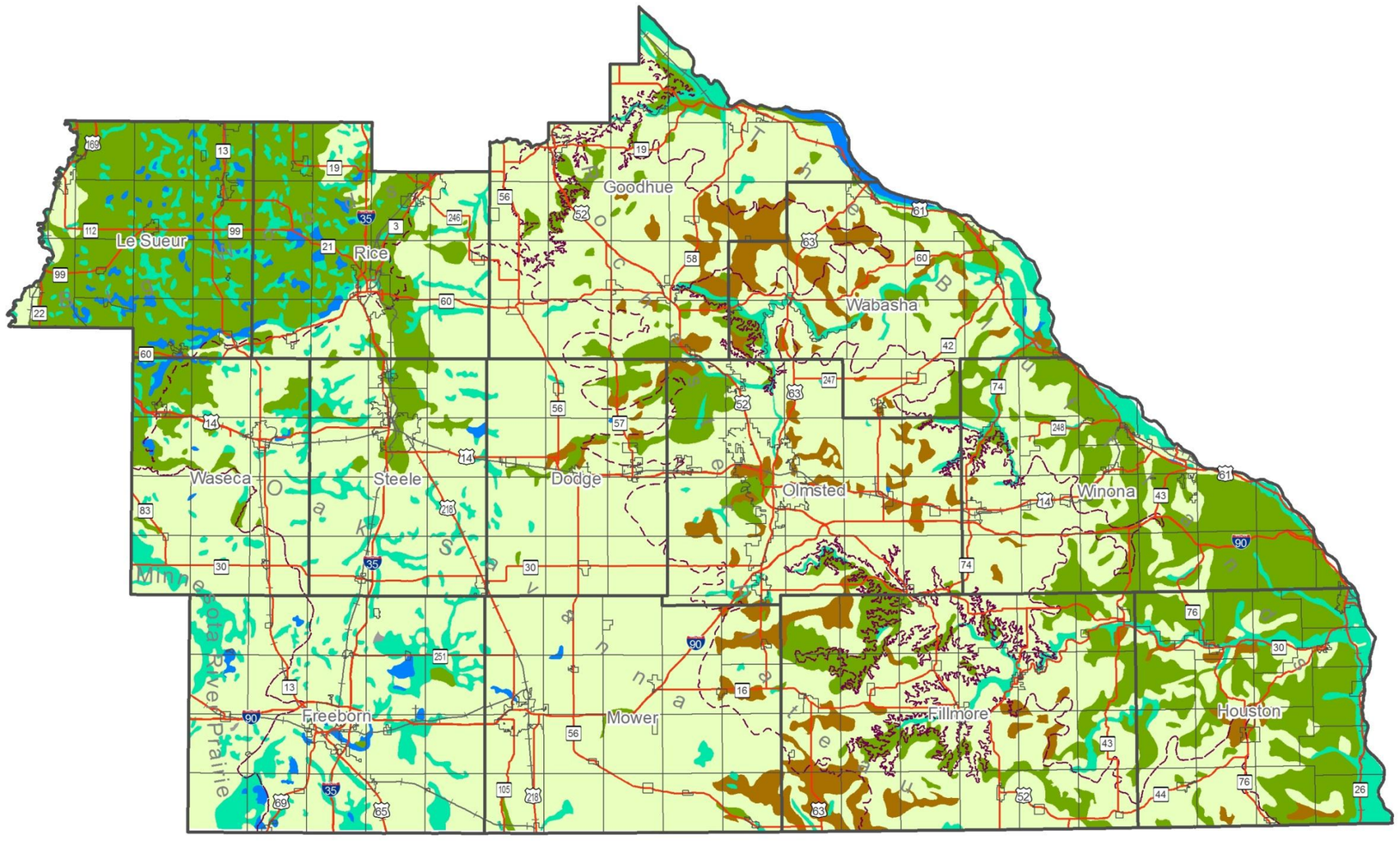
Minnesota Forest Resources Council

Land Cover (2006) Table

Comparative Class	National Land Cover Dataset 2006	Area (Acres)	% of Total
Upland Forest	Deciduous Forest	661,882	13.3
	Evergreen Forest	9,829	0.2
	Mixed Forest	630	0.0
Subtotal (Upland Forest)		**672,341**	**13.5**
Upland Shrub	Shrub/Scrub	11,327	0.2
Subtotal (Upland Shrub)		**11,327**	**0.2**
Upland Grass	Grassland/Herbaceous	397,202	8.0
	Pasture/Hay	600,958	12.1
Subtotal (Upland Grass)		**998,160**	**20.0**
Lowland Vegetation	Woody Wetlands	56,702	1.1
	Emergent Herbaceous Wetlands	61,422	1.2
Subtotal (Lowland Vegetation)		**118,124**	**2.4**
Agriculture	Cultivated Crops	2,704,690	54.3
Subtotal (Agriculture)		**2,704,690**	**54.3**
Open Water	Open Water	104,309	2.1
Subtotal (Open Water)		**104,309**	**2.1**
Barren	Barren Land (Rock/Sand/Clay)	3,412	0.1
Subtotal (Barren)		**3,412**	**0.1**
Developed	Developed, Open Space	248,553	5.0
	Developed, Low Intensity	90,652	1.8
	Developed, Medium Intensity	21,086	0.4
	Developed, High Intensity	6,773	0.1
Subtotal (Developed)		**367,064**	**7.4**
Total Southeast Region		**4,979,428**	**100.0**

Presettlement Land Cover (1895) - Reclassified

Southeast Landscape Region



Presettlement Land Cover (Marschner's) - Reclassified

- Upland Forest
- Upland Shrub
- Upland Grass
- Lowland Vegetation
- Open Water
- Unclassified

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

Note: Current political boundaries and roads are displayed to provide a spatial reference for Presettlement Land Cover data.

Sources: Presettlement Land Cover - MNDNR Data Deli; Other Features - MNDNR Data Deli

N

Minnesota Forest Resources Council

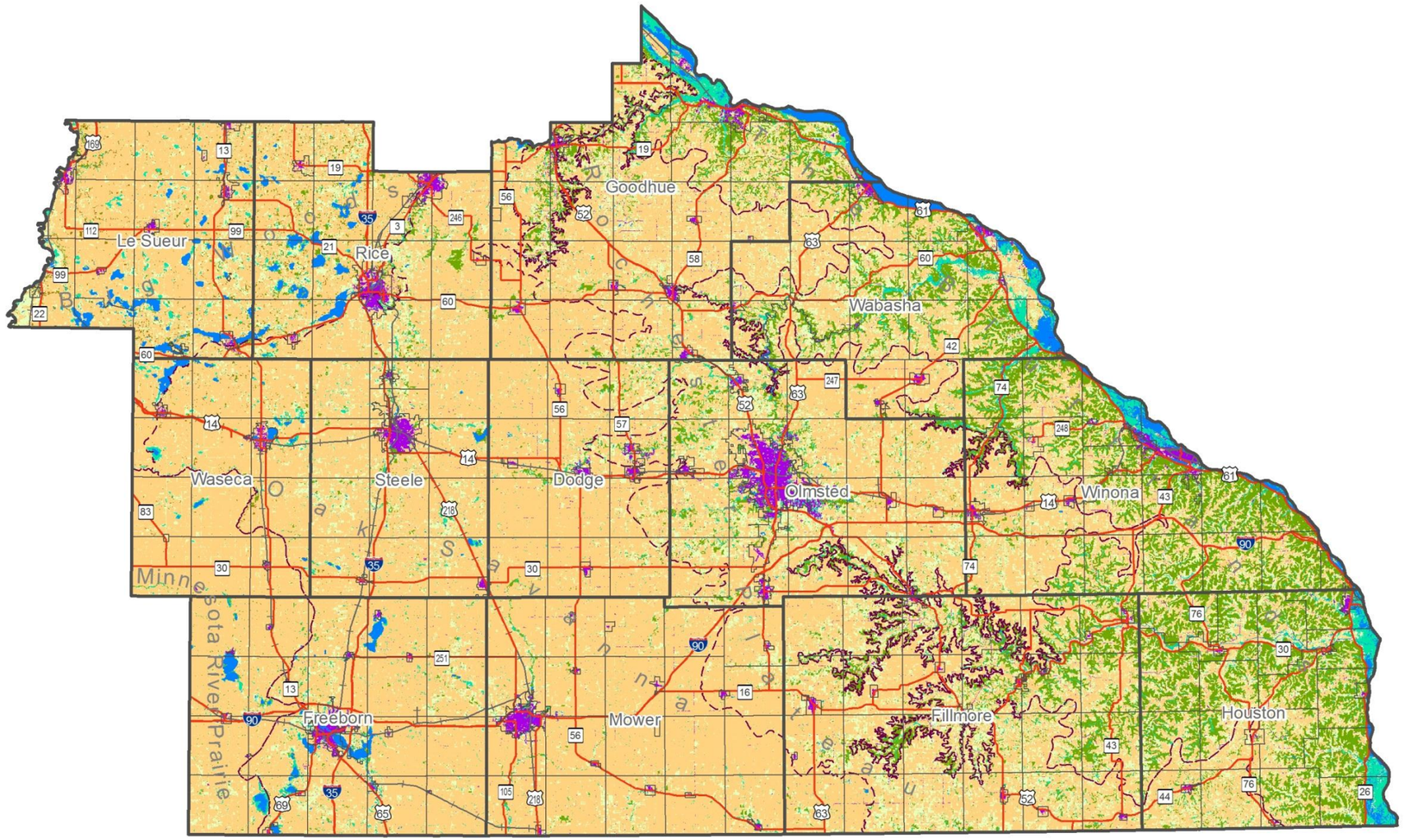
Presettlement Land Cover (1895) - Reclassified Table

	Marschner's Presettlement (1895)					GAP Land Cover (1992)			
Comparative Class	**Area (Acres)**	**% of Total**	**NA**	**NA**		**Area (Acres)**	**% of Total**	**Change 1895 to 1992 (Acres)**	**Change 1895 to 1992 (% Cover)**
Upland Forest	1,054,837	21.2	-	-		469,866	9.4	-584,971	-11.7
Upland Shrub	224,998	4.5	-	-		33,003	0.7	-191,995	-3.9
Upland Grass	3,228,472	64.8	-	-		834,838	16.8	-2,393,634	-48.1
Lowland Vegetation	390,224	7.8	-	-		147,744	3.0	-242,480	-4.9
Agriculture	0	0.0	-	-		3,291,895	66.1	3,291,895	66.1
Open Water	56,754	1.1	-	-		91,037	1.8	34,283	0.7
Barren	0	0.0	-	-		121	0.0	121	0.0
Developed	0	0.0	-	-		110,896	2.2	110,896	2.2
Unclassified	24,144	0.5	-	-		29	0.0	-24,114	-0.5
Total Southeast Region	**4,979,428**	**100.0**				**4,979,428**	**100.0**		

	NLCD (2001)					NLCD (2006)			
Comparative Class	**Area (Acres)**	**% of Total**	**Change 1992 to 2001 (Acres)**	**Change 1992 to 2001 (% Cover)**		**Area (Acres)**	**% of Total**	**Change 2001 to 2006 (Acres)**	**Change 2001 to 2006 (% Cover)**
Upland Forest	673,365	13.5	203,499	4.1		672,341	13.5	-1,024	0.0
Upland Shrub	10,759	0.2	-22,244	-0.4		11,327	0.2	568	0.0
Upland Grass	1,003,655	20.2	168,817	3.4		998,160	20.0	-5,495	-0.1
Lowland Vegetation	115,586	2.3	-32,158	-0.6		118,124	2.4	2,538	0.1
Agriculture	2,709,445	54.4	-582,450	-11.7		2,704,690	54.3	-4,755	-0.1
Open Water	104,064	2.1	13,027	0.3		104,309	2.1	245	0.0
Barren	3,214	0.1	3,094	0.1		3,412	0.1	198	0.0
Developed	359,339	7.2	248,443	5.0		367,064	7.4	7,725	0.2
Unclassified	0	0.0	-29	0.0		0	0.0	0	0.0
Total Southeast Region	**4,979,428**	**100.0**				**4,979,428**	**100.0**		

Land Cover (1992) - Reclassified

Southeast Landscape Region



GAP Level 4 - Reclassified

- Upland Forest
- Upland Shrub
- Upland Grass
- Lowland Vegetation
- Agriculture
- Open Water
- Barren
- Developed
- Unclassified

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: GAP Land Cover - MNDNR Data Deli; Other Features - MNDNR Data Deli

N

Minnesota Forest Resources Council

Land Cover (1992) - Reclassified Table

	Marschner's Presettlement (1895)					GAP Land Cover (1992)			
Comparative Class	**Area (Acres)**	**% of Total**	**NA**	**NA**		**Area (Acres)**	**% of Total**	**Change 1895 to 1992 (Acres)**	**Change 1895 to 1992 (% Cover)**
Upland Forest	1,054,837	21.2	-	-		469,866	9.4	-584,971	-11.7
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Agriculture	0	0.0	-	-		3,291,895	66.1	3,291,895	66.1
Open Water	56,754	1.1	-	-		91,037	1.8	34,283	0.7
Barren	0	0.0	-	-		121	0.0	121	0.0
Developed	0	0.0	-	-		110,896	2.2	110,896	2.2
Unclassified	24,144	0.5	-	-		29	0.0	-24,114	-0.5
Total Southeast Region	**4,979,428**	**100.0**				**4,979,428**	**100.0**		

	NLCD (2001)					NLCD (2006)			
Comparative Class	**Area (Acres)**	**% of Total**	**Change 1992 to 2001 (Acres)**	**Change 1992 to 2001 (% Cover)**		**Area (Acres)**	**% of Total**	**Change 2001 to 2006 (Acres)**	**Change 2001 to 2006 (% Cover)**
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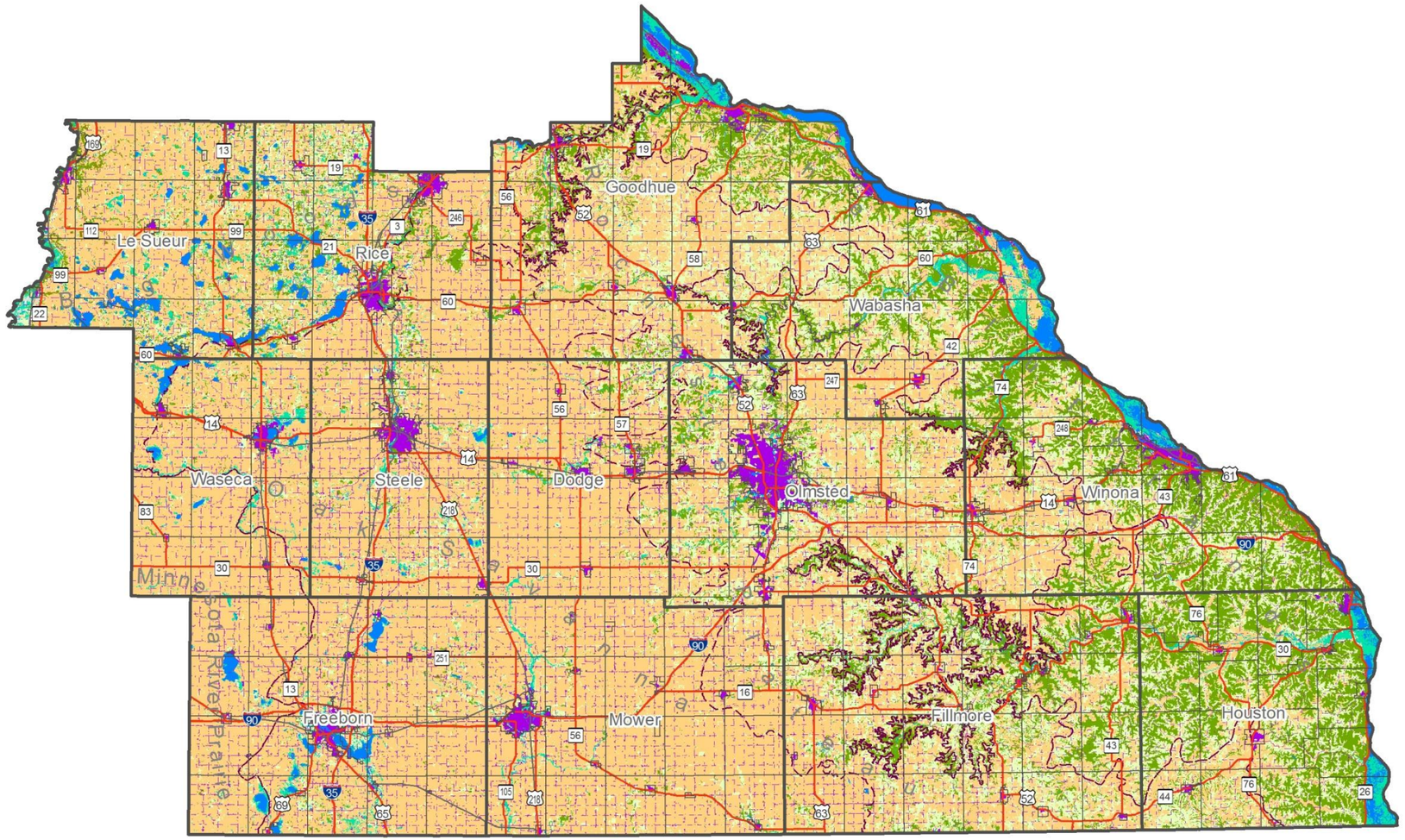
Total Southeast Region	**4,979,428**	**100.0**				**4,979,428**	**100.0**		

Land Cover (2001) - Reclassified

Southeast Landscape Region



NLCD 2001 - Reclassified

- Upland Forest
- Upland Shrub
- Upland Grass
- Lowland Vegetation
- Agriculture
- Open Water
- Barren
- Developed

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: National Land Cover Dataset - MRLC; Other Features - MNDNR Data Deli

N

Minnesota Forest Resources Council

Land Cover (2001) - Reclassified Table

	Marschner's Presettlement (1895)					GAP Land Cover (1992)			
Comparative Class	**Area (Acres)**	**% of Total**	**NA**	**NA**		**Area (Acres)**	**% of Total**	**Change 1895 to 1992 (Acres)**	**Change 1895 to 1992 (% Cover)**
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	NLCD (2001)					NLCD (2006)			
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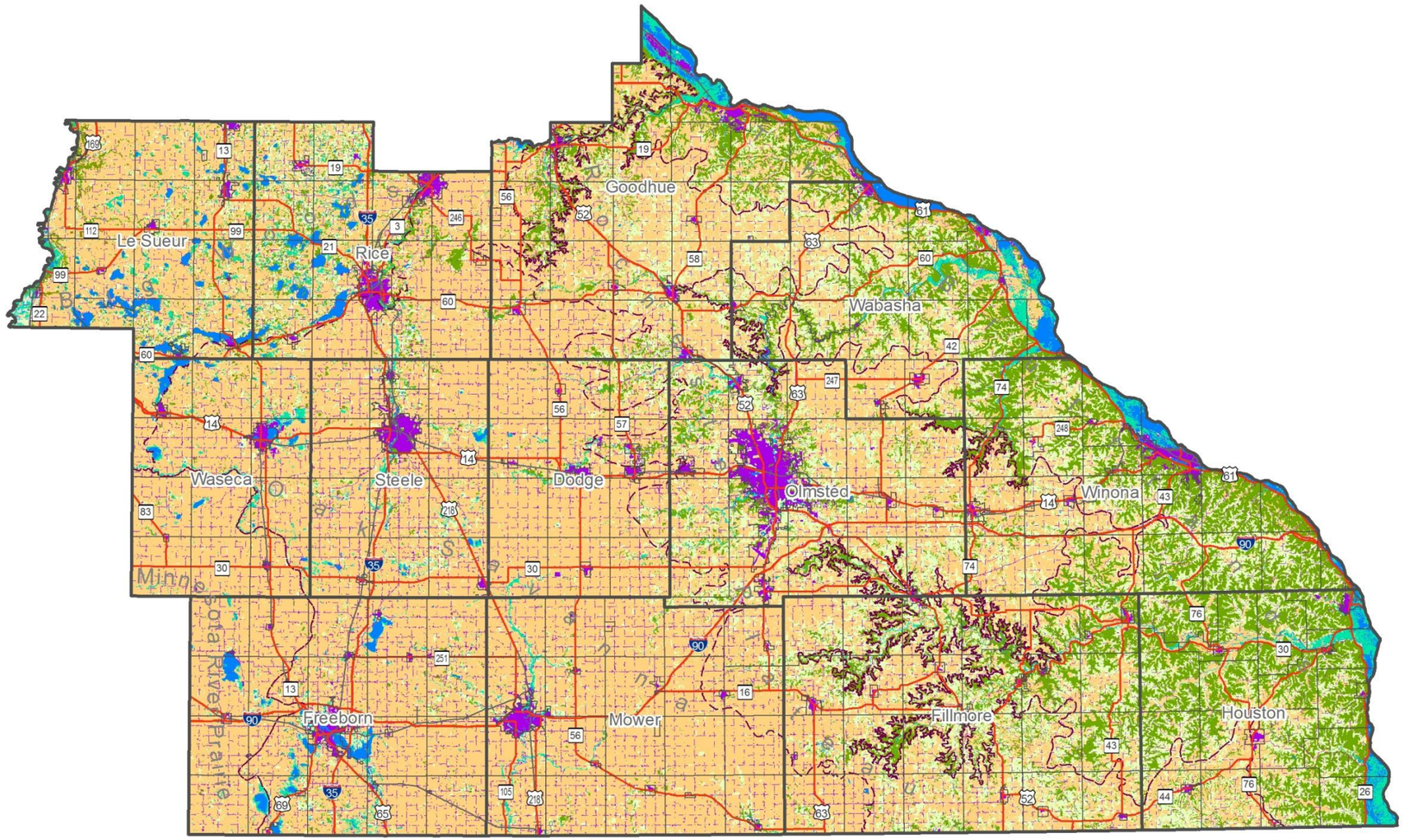
Agriculture	2,709,445	54.4	-582,450	-11.7		2,704,690	54.3	-4,755	-0.1
Open Water	104,064	2.1	13,027	0.3		104,309	2.1	245	0.0
Barren	3,214	0.1	3,094	0.1		3,412	0.1	198	0.0
Developed	359,339	7.2	248,443	5.0		367,064	7.4	7,725	0.2
Unclassified	0	0.0	-29	0.0		0	0.0	0	0.0
Total Southeast Region	**4,979,428**	**100.0**				**4,979,428**	**100.0**		

Land Cover (2006) - Reclassified

Southeast Landscape Region



NLCD 2006 - Reclassified

- Upland Forest
- Upland Shrub
- Upland Grass
- Lowland Vegetation
- Agriculture
- Open Water
- Barren
- Developed

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: National Land Cover Dataset - MRLC; Other Features - MNDNR Data Deli

N

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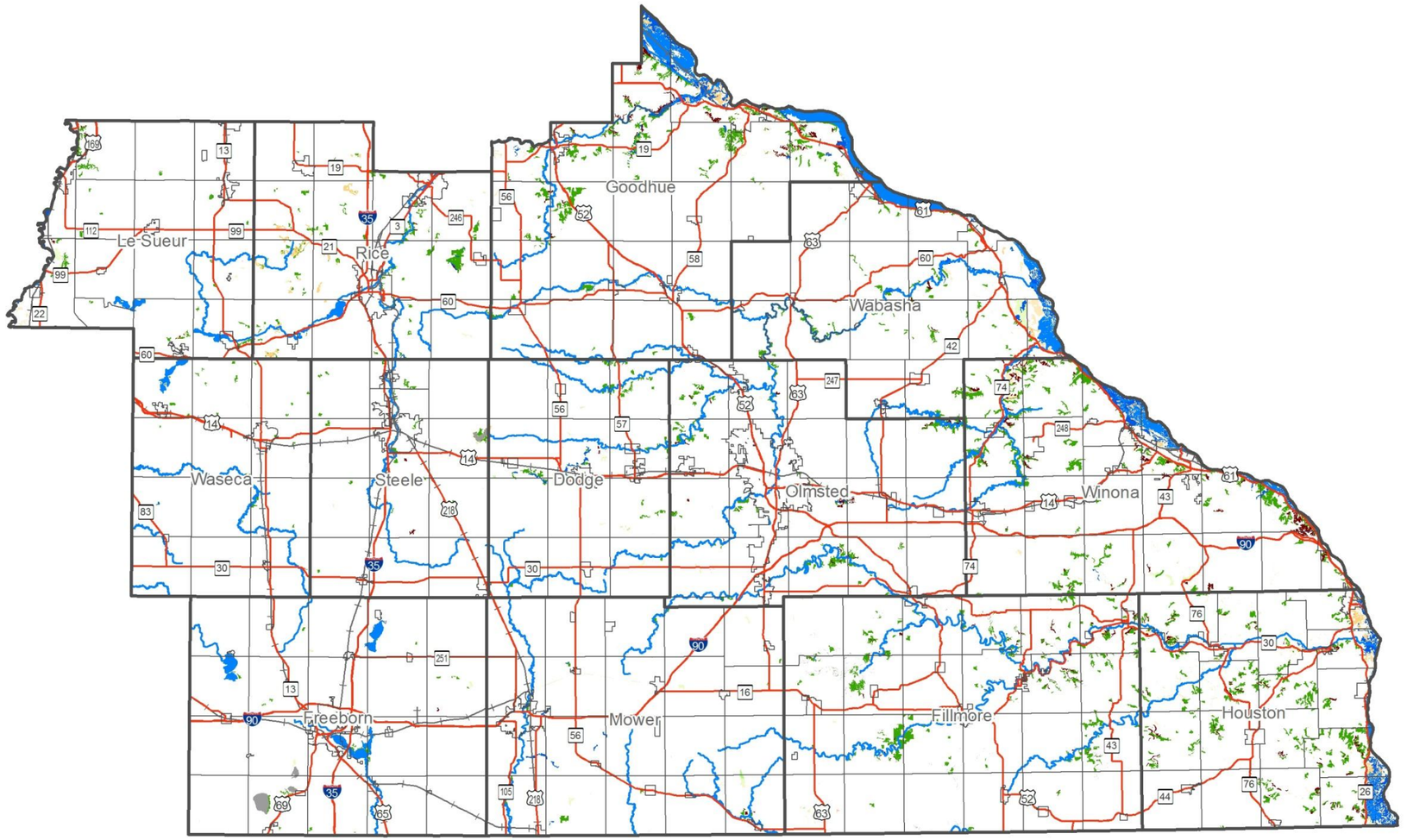
Land Cover (2006) - Reclassified Table

	Marschner's Presettlement (1895)					GAP Land Cover (1992)			
Comparative Class	**Area (Acres)**	**% of Total**	**NA**	**NA**		**Area (Acres)**	**% of Total**	**Change 1895 to 1992 (Acres)**	**Change 1895 to 1992 (% Cover)**
Upland Forest	1,054,837	21.2	-	-		469,866	9.4	-584,971	-11.7
Upland Shrub	224,998	4.5	-	-		33,003	0.7	-191,995	-3.9
Upland Grass	3,228,472	64.8	-	-		834,838	16.8	-2,393,634	-48.1
Lowland Vegetation	390,224	7.8	-	-		147,744	3.0	-242,480	-4.9
Agriculture	0	0.0	-	-		3,291,895	66.1	3,291,895	66.1
Open Water	56,754	1.1	-	-		91,037	1.8	34,283	0.7
Barren	0	0.0	-	-		121	0.0	121	0.0
Developed	0	0.0	-	-		110,896	2.2	110,896	2.2
Unclassified	24,144	0.5	-	-		29	0.0	-24,114	-0.5
Total Southeast Region	**4,979,428**	**100.0**				**4,979,428**	**100.0**		

	NLCD (2001)					NLCD (2006)			
Comparative Class	**Area (Acres)**	**% of Total**	**Change 1992 to 2001 (Acres)**	**Change 1992 to 2001 (% Cover)**		**Area (Acres)**	**% of Total**	**Change 2001 to 2006 (Acres)**	**Change 2001 to 2006 (% Cover)**
Upland Forest	673,365	13.5	203,499	4.1		672,341	13.5	-1,024	0.0
Upland Shrub	10,759	0.2	-22,244	-0.4		11,327	0.2	568	0.0
Upland Grass	1,003,655	20.2	168,817	3.4		998,160	20.0	-5,495	-0.1
Lowland Vegetation	115,586	2.3	-32,158	-0.6		118,124	2.4	2,538	0.1
Agriculture	2,709,445	54.4	-582,450	-11.7		2,704,690	54.3	-4,755	-0.1
Open Water	104,064	2.1	13,027	0.3		104,309	2.1	245	0.0
Barren	3,214	0.1	3,094	0.1		3,412	0.1	198	0.0
Developed	359,339	7.2	248,443	5.0		367,064	7.4	7,725	0.2
Unclassified	0	0.0	-29	0.0		0	0.0	0	0.0
Total Southeast Region	**4,979,428**	**100.0**				**4,979,428**	**100.0**		

MBS Native Plant Communities

Southeast Landscape Region



Sources: MBS Native Plant Communities - MNDNR Data Deli; Other Features - MNDNR Data Deli

Minnesota Forest Resources Council

MBS Native Plant Communities

- Cliff/Talus
- Fire-Dependent Forest/Woodland
- Floodplain Forest
- Forested Rich Peatland
- Lake Shore
- Marsh
- Mesic Hardwood Forest
- Open Rich Peatland
- Other
- River Shore
- Upland Prairie
- Wet Forest
- Wet Meadow/Carr
- Wetland Prairie

Other Features

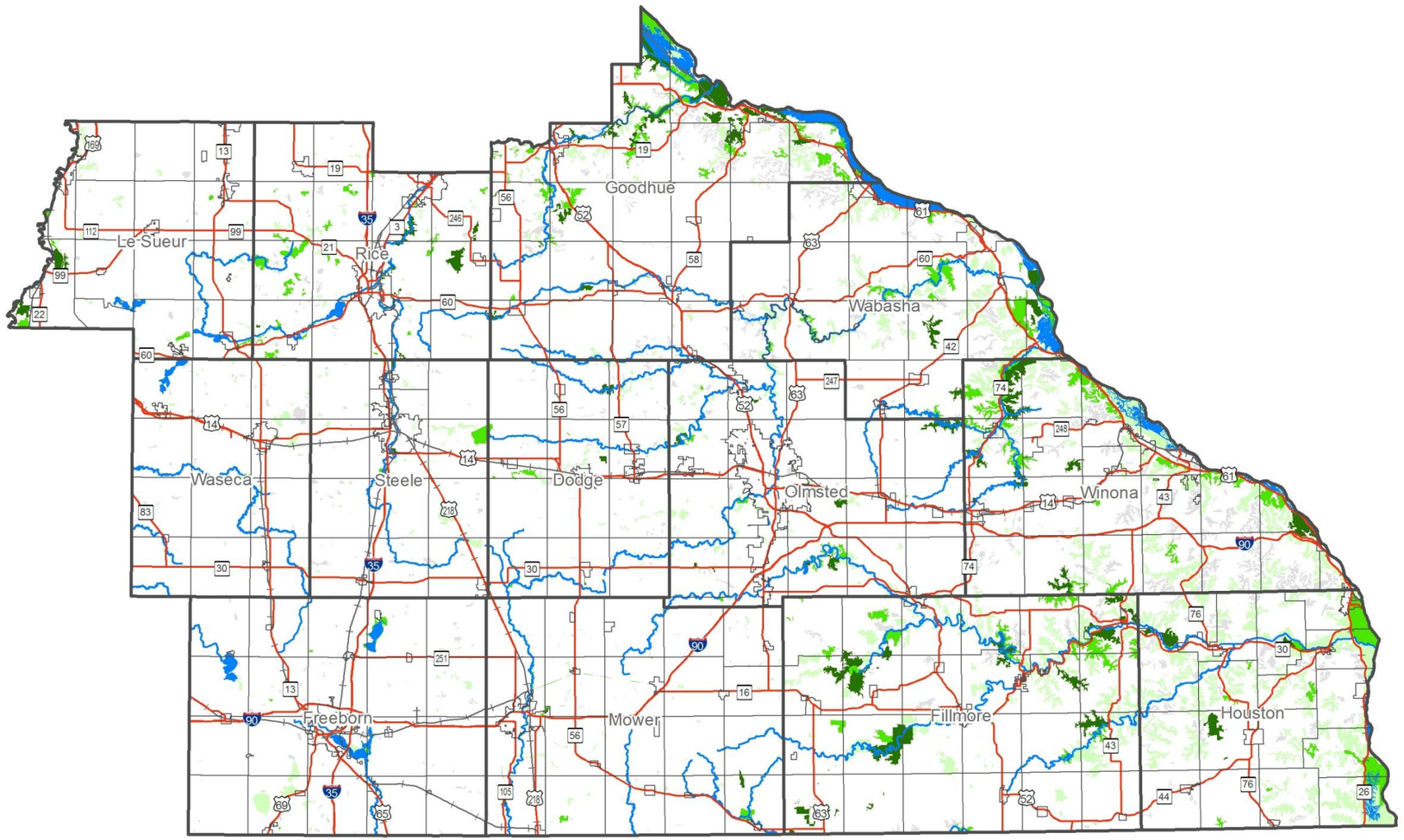
- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

MBS Native Plant Communities Table

MBS Native Plant Communities	Acres	% of Total
Cliff/Talus	2,457	0.0
Fire-Dependent Forest/Woodland	14,244	0.3
Floodplain Forest	31,342	0.6
Forested Rich Peatland	34	0.0
Lake Shore	34	0.0
Marsh	9,695	0.2
Mesic Hardwood Forest	90,513	1.8
Open Rich Peatland	179	0.0
Other	4,553	0.1
River Shore	148	0.0
Upland Prairie	12,113	0.2
Wet Forest	121	0.0
Wet Meadow/Carr	5,433	0.1
Wetland Prairie	303	0.0
Total MBS Native Plant Communities	**171,168**	**3.4**
Total Southeast Region	**4,979,428**	**-**

MBS Biodiversity Significance

Southeast Landscape Region



MBS Biodiversity Significance

- Outstanding
- High
- Moderate
- Below

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: MBS Biodiversity Significance - MNDNR Data Deli; Other Features - MNDNR Data Deli

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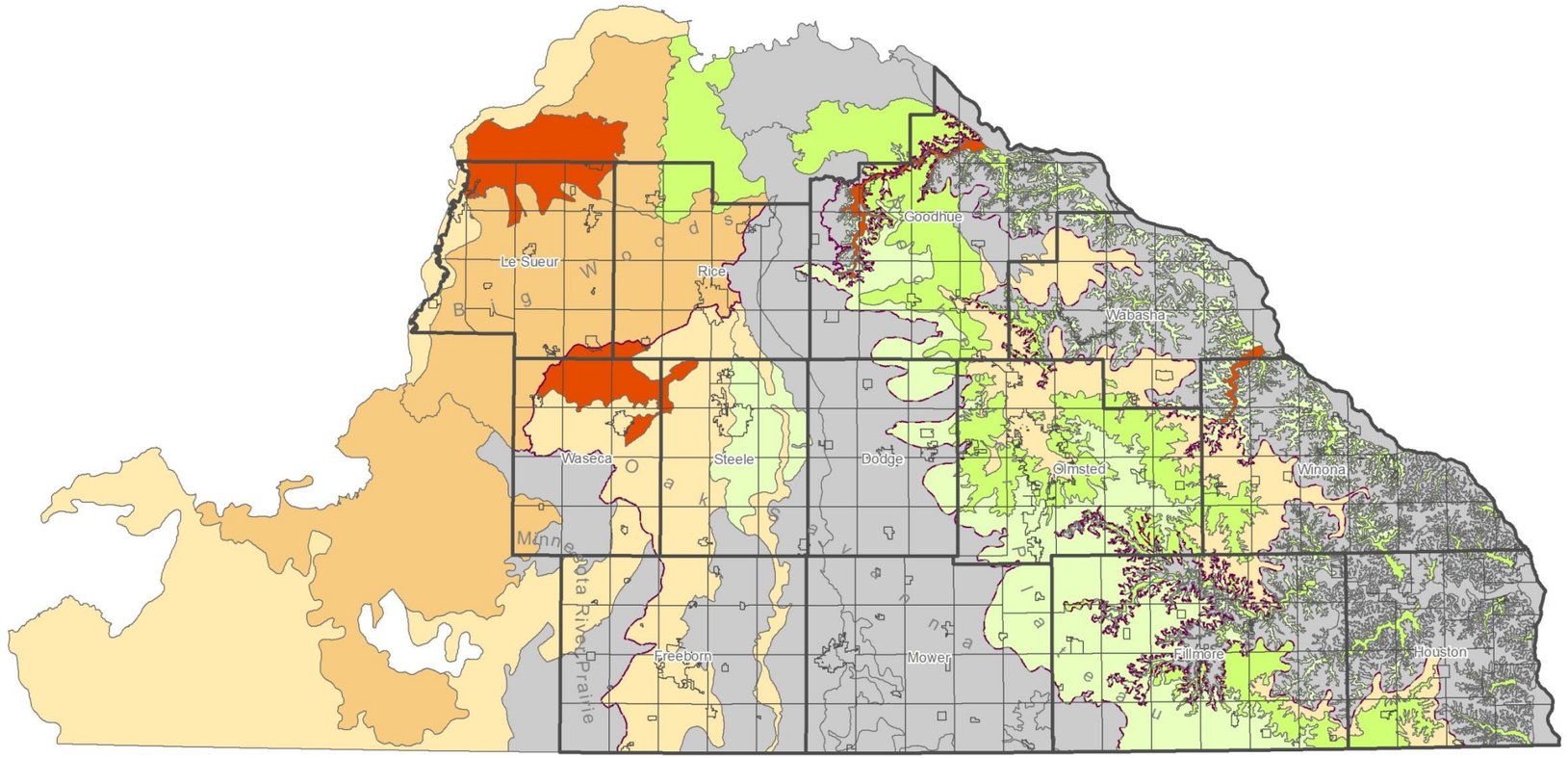
Biodiversity Significance Table

Biodiversity Significance	Acres	% of Total
Outstanding	69,921	1.40
High	92,684	1.86
Moderate	223,778	4.49
Below	100,344	2.02
Total Biodiversity Significance	**486,726**	**9.77**
Total Project Area	**4,979,428**	**-**

Change in Relative Abundance of Aspen by ECS Land Type

Southeast Landscape Region



Aspen Abundance

(1908-1990)

- Increase, > 10-fold
- Increase, 5 to 10-fold
- Increase, 3 to 5-fold
- Increase, 2 to 3-fold
- Some increase
- Some decline
- Decline, 2 to 3-fold
- Decline, 3 to 5-fold
- Decline, 5 to 10-fold
- Decline, > 10-fold
- Rare as bearing tree

Other Features

- County Boundaries
- Municipal Boundaries
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Aspen Abundance - MNDNR; Other Features - MNDNR Data Deli

N

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Change in Relative Abundance of Aspen by ECS Land Type Table

Aspen Abundance (1908-1990)	Acres	% of Total
Increase, 2 to 3-fold	680,530	9.9
Some increase	888,933	13.0
Some decline	1,627,997	23.8
Decline, 2 to 3-fold	1,072,292	15.7
Decline, > 10-fold	188,911	2.8
Rare as bearing tree	2,391,769	34.9
Totals	**6,850,433**	

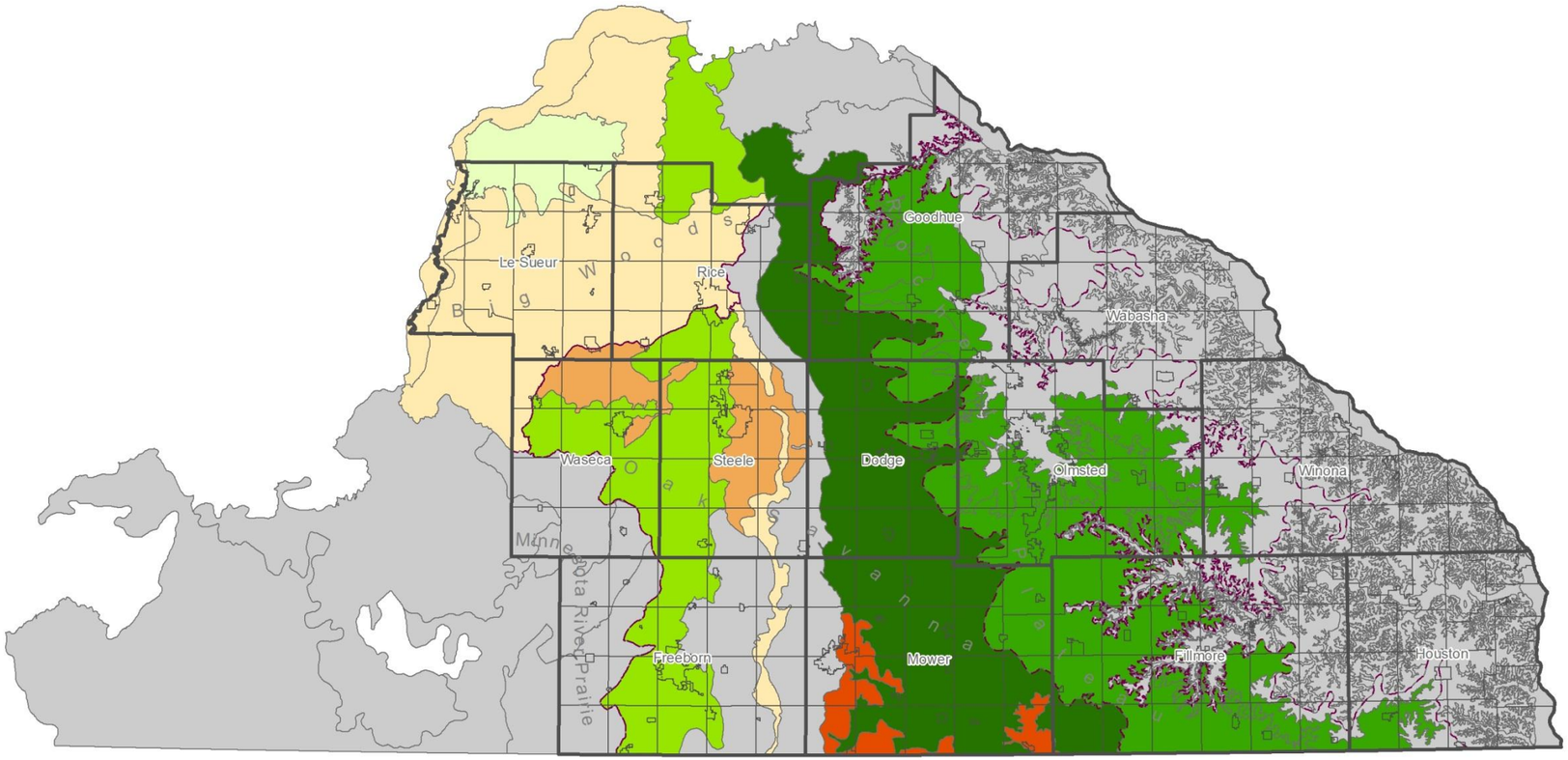
This analysis compares the relative abundance of trees using two sets of data, the Public Land Survey (PLS) and the 1990 Forest Inventory Analysis (FIA). PLS records were collected between 1846 and 1908 in Minnesota, thus PLS surveys predate significant settlement and logging in most areas and provide a comprehensive sampling of trees at that time. Tree species and their diameters, azimuths, and distances from survey corners were recorded at every section and quarter-section corner where trees were available.

FIA data were collected between 1986 and 1991 on randomly located plots in forests. Each plot consists of ten points. At each point tree species, and their diameters, azimuths, and distances from point center were recorded where trees were available. Thus FIA points differ from PLS survey corners with regard to the number of trees sampled (usually more) and no requirements to locate a tree in all four cardinal quadrants (NE, SE, SW, NW). A subset of the FIA point data was created to replicate the PLS data by selecting the nearest tree (greater than 4 inches d.b.h.) in each cardinal quadrant. PLS survey corners and FIA points were summarized by their occurrence in 291 Land Type Association (LTA) map units for the state. For each LTA, relative abundance of tree species were calculated and compared.

Study by John Almendinger, Minn. Dept. of Natural Resources, 2002

Change in Relative Abundance of Red Oak by ECS Land Type

Southeast Landscape Region



Red Oak Abundance

(1908-1990)

- Increase, > 10-fold
- Increase, 5 to 10-fold
- Increase, 3 to 5-fold
- Increase, 2 to 3-fold
- Some increase
- Some decline
- Decline, 2 to 3-fold
- Decline, 3 to 5-fold
- Decline, 5 to 10-fold
- Decline, > 10-fold
- Rare as bearing tree

Other Features

- County Boundaries
- Municipal Boundaries
- ECS Subsections

0 5 10 20 30 40 Miles

Sources: Red Oak Abundance - MNDNR; Other Features - MNDNR Data Deli

N

Minnesota Forest Resources Council

Change in Relative Abundance of Red Oak by ECS Land Type Table

Red Oak Abundance (1908-1990)	Acres	% of Total
Increase, > 10-fold	708,270	10.3
Increase, 5 to 10-fold	898,812	13.1
Increase, 3 to 5-fold	476,135	7.0
Some increase	105,524	1.5
Some decline	749,025	10.9
Decline, 3 to 5-fold	147,884	2.2
Decline, > 10-fold	69,024	1.0
Rare as bearing tree	3,695,759	53.9
Total LTA Areas	**6,850,433**	

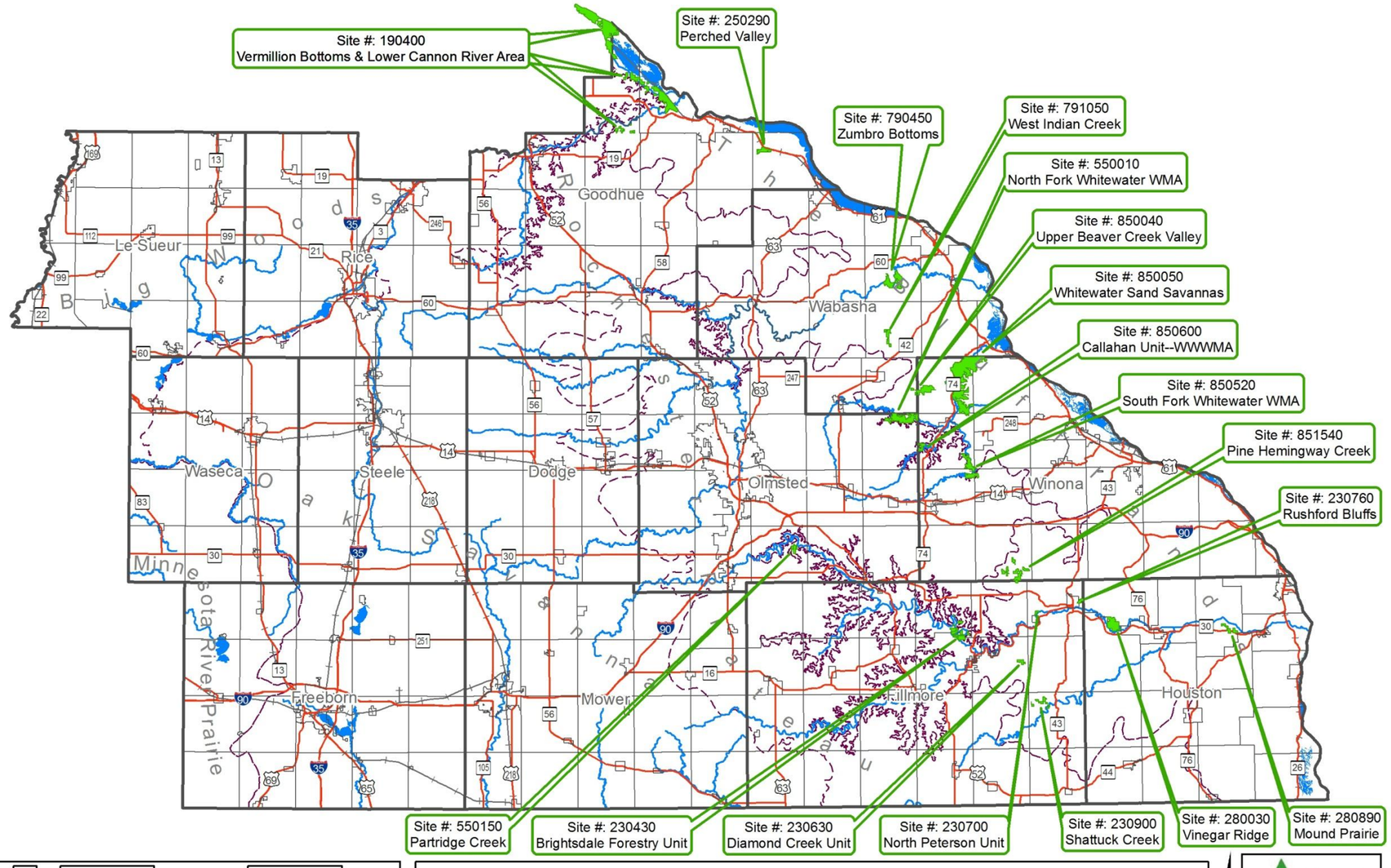
This analysis compares the relative abundance of trees using two sets of data, the Public Land Survey (PLS) and the 1990 Forest Inventory Analysis (FIA). PLS records were collected between 1846 and 1908 in Minnesota, thus PLS surveys predate significant settlement and logging in most areas and provide a comprehensive sampling of trees at that time. Tree species and their diameters, azimuths, and distances from survey corners were recorded at every section and quarter-section corner where trees were available.

FIA data were collected between 1986 and 1991 on randomly located plots in forests. Each plot consists of ten points. At each point tree species, and their diameters, azimuths, and distances from point center were recorded where trees were available. Thus FIA points differ from PLS survey corners with regard to the number of trees sampled (usually more) and no requirements to locate a tree in all four cardinal quadrants (NE, SE, SW, NW). A subset of the FIA point data was created to replicate the PLS data by selecting the nearest tree (greater than 4 inches d.b.h.) in each cardinal quadrant. PLS survey corners and FIA points were summarized by their occurrence in 291 Land Type Association (LTA) map units for the state. For each LTA, relative abundance of tree species were calculated and compared.

Study by John Almendinger, Minn. Dept. of Natural Resources, 2002

High Conservation Value Forest Candidates

Southeast Landscape Region



HCVF Candidates (7/17/2013)

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

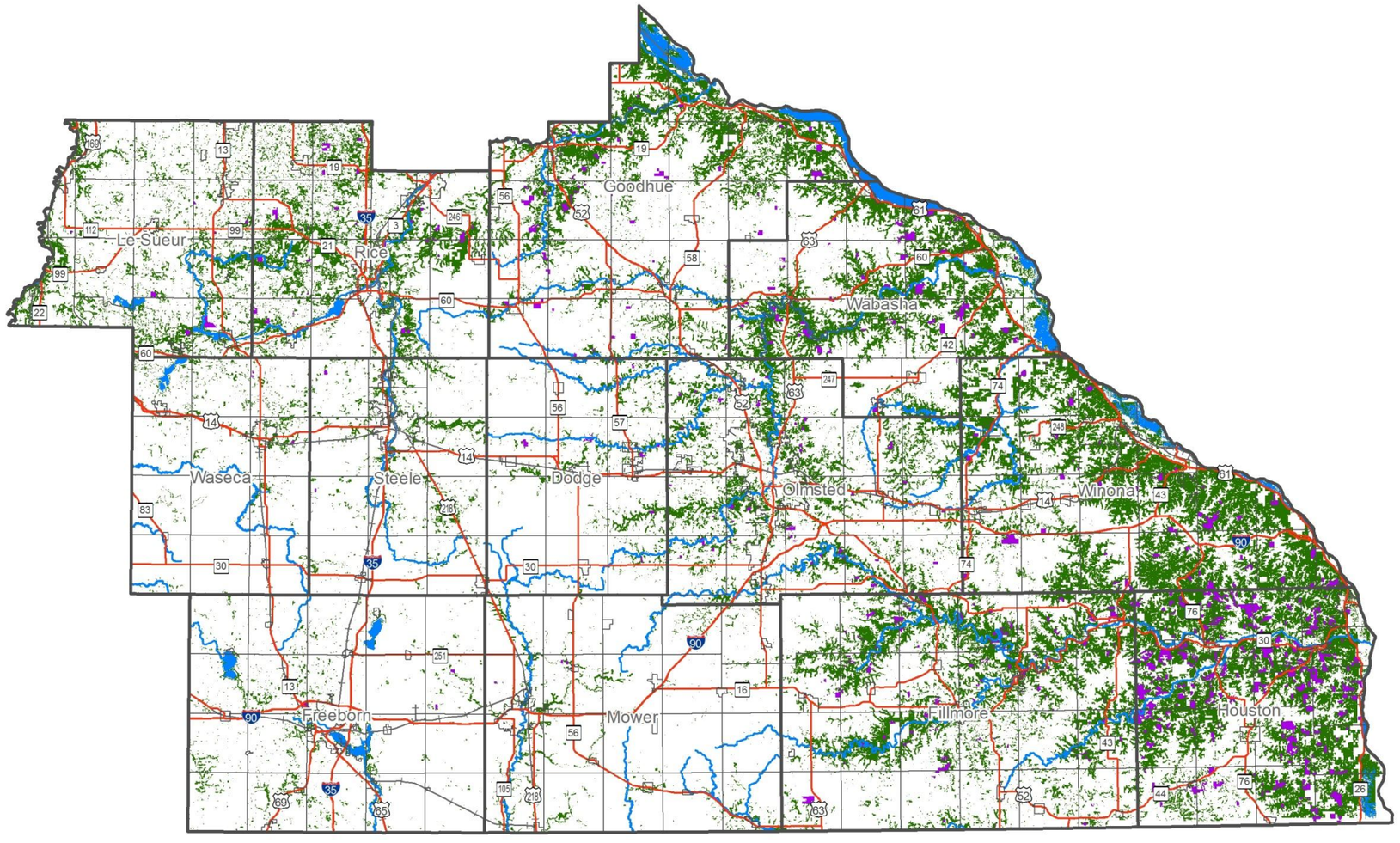
High Conservation Value Forest Candidates Table

Site #	Site Name	County*	ECS Subsection	Acres	Acres in Region	Percent in Region
190400	Vermillion Bottoms & Lower Cannon River Area	Dakota	The Blufflands	5,897	2,968	50.3
230430	Brightsdale Forestry Unit	Fillmore	Rochester Plateau	782	782	100.0
230630	Diamond Creek Unit	Fillmore	The Blufflands	153	153	100.0
230700	North Peterson Unit	Fillmore	The Blufflands	61	61	100.0
230760	Rushford Bluffs	Fillmore	The Blufflands	119	119	100.0
230900	Shattuck Creek	Fillmore	The Blufflands	268	268	100.0
250290	Perched Valley	Goodhue	The Blufflands	348	348	100.0
280030	Vinegar Ridge	Houston	The Blufflands	892	892	100.0
280890	Mound Prairie	Houston	The Blufflands	316	316	100.0
550010	North Fork Whitewater WMA	Olmsted	The Blufflands	1,353	1,353	100.0
550150	Partridge Creek	Olmsted	The Blufflands	227	227	100.0
790450	Zumbro Bottoms	Wabasha	The Blufflands	1,033	1,033	100.0
791050	West Indian Creek	Wabasha	The Blufflands	293	293	100.0
850040	Upper Beaver Creek Valley	Winona	The Blufflands	752	752	100.0
850050	Whitewater Sand Savannas	Winona	The Blufflands	5,856	5,856	100.0
850520	South Fork Whitewater WMA	Winona	Rochester Plateau	989	989	100.0
850600	Callahan Unit--WWWMA	Winona	The Blufflands	204	204	100.0
851540	Pine Hemingway Creek	Winona	The Blufflands	833	833	100.0

* May intersect more than one county

Forest Stewardship Plans

Southeast Landscape Region



Current Stewardship Plans

(as of 9/30/2013)

Important Forest Resource Areas

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Stewardship Plans - MNDNR Forestry PFM Program; Important Forest Resource Areas - USFS SAP; Other Features - MNDNR Data Deli

N

Minnesota Forest Resources Council

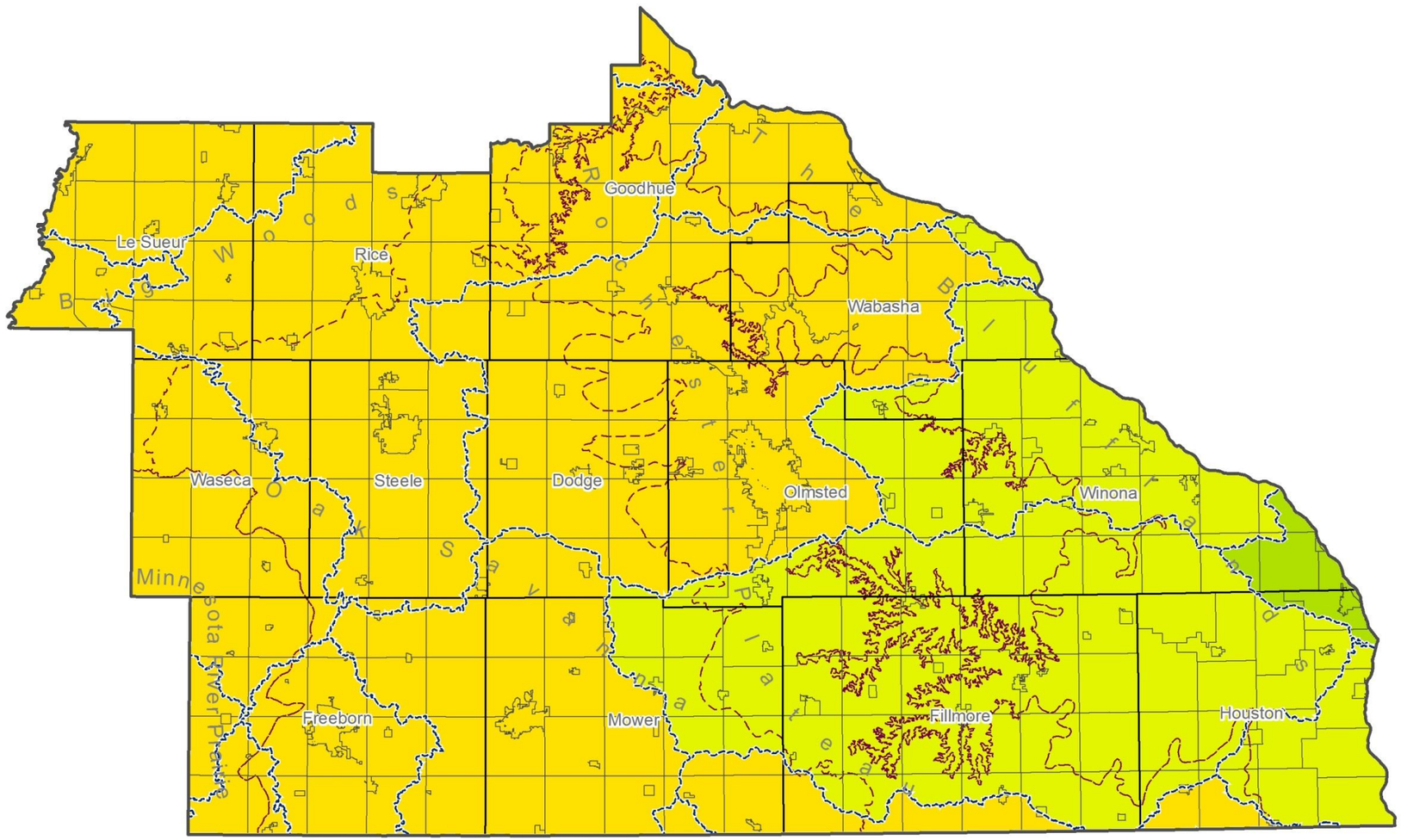
Forest Stewardship Plans Tables

Study Area	Metric	Acres
Southeast	Acres covered by current forest stewardship plans	66,870
	Acres of Important Forest Resource Areas	826,556
	Acres in Important Forest Resource Areas covered by current Forest Stewardship Plans	41,184
Minnesota	Acres covered by current forest stewardship plans	618,682
	Acres of Important Forest Resource Areas	9,898,192
	Acres in Important Forest Resource Areas covered by current Forest Stewardship Plans	415,893

County	Acres in county	Acres covered by current forest stewardship plans	Acres of Important Forest Resource Areas	Acres in Important Forest Resource Areas covered by current Forest Stewardship Plans
Dodge	281,164	1,001	14,084	429
Fillmore	551,460	7,935	115,611	5,242
Freeborn	461,960	384	11,691	70
Goodhue	499,093	5,305	90,800	1,707
Houston	363,942	31,094	154,875	21,982
Le Sueur	303,022	1,090	34,000	467
Mower	455,010	191	14,370	113
Olmsted	418,743	2,857	65,429	1,332
Rice	329,914	2,372	56,653	1,132
Steele	276,476	99	15,341	67
Wabasha	351,374	6,802	94,775	4,125
Waseca	276,947	125	8,005	68
Winona	410,324	7,614	150,922	4,449
Total Southeast Region	**4,979,428**	**66,870**	**826,556**	**41,184**

Watershed Health Score

Southeast Landscape Region

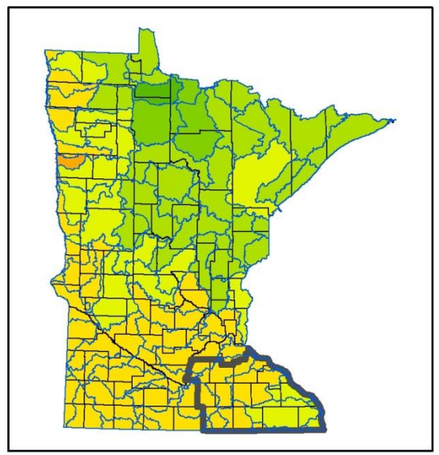


Watershed Health Score (average)

- 0 - 10
- 11 - 20
- 21 - 30
- 31- 40
- 41 - 50
- 51 - 60
- 61 - 70
- 71 - 80
- 81 - 90
- 91 - 100

Other Features

- County Boundaries
- Municipal Boundaries
- ECS Subsections



Sources: Watershed Health Score - MNDNR WHAF; Other Features - MNDNR Data Deli

Minnesota Forest Resources Council

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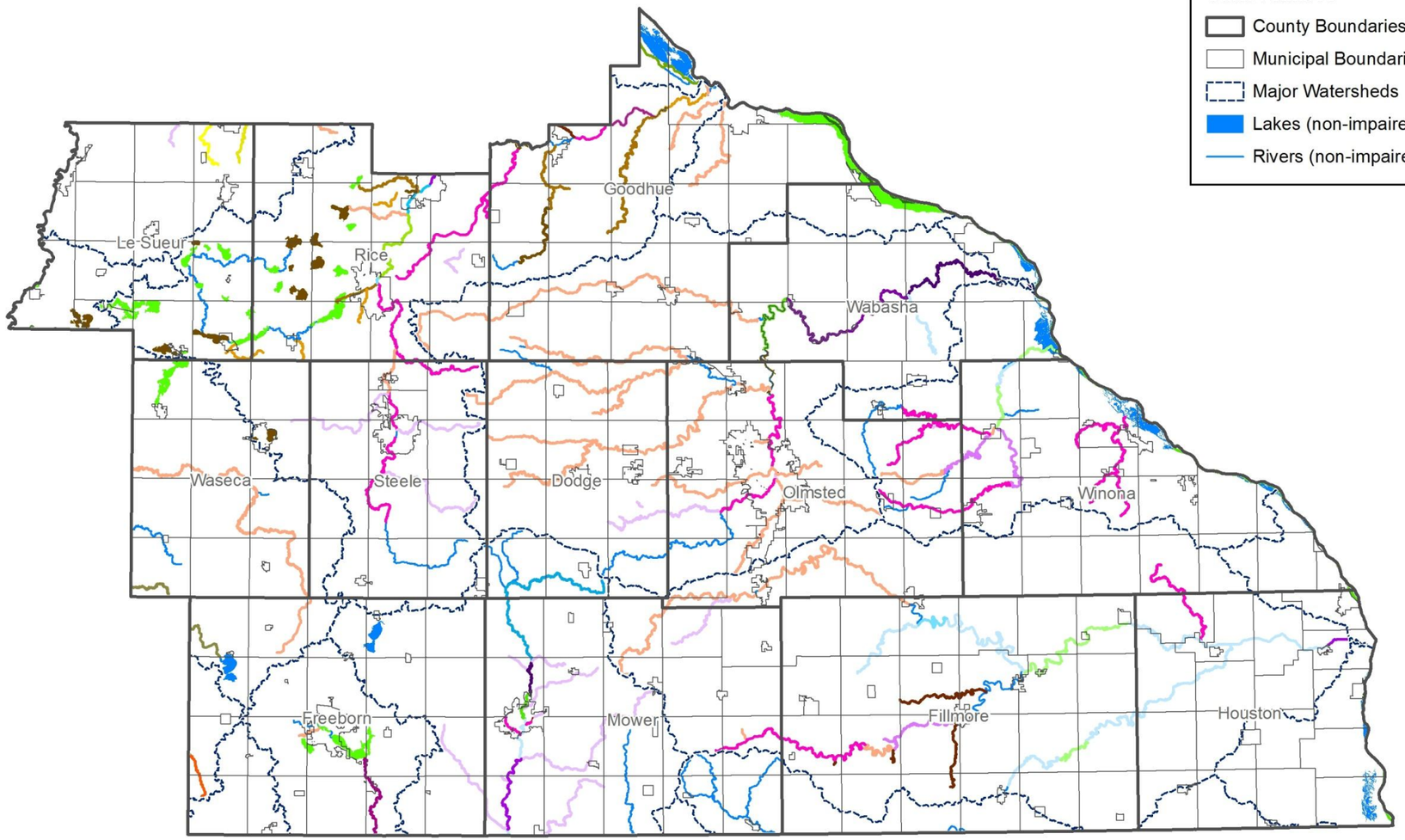
Impaired Waters

Southeast Landscape Region



Other Features

- County Boundaries
- Municipal Boundaries
- Major Watersheds
- Lakes (non-impaired)
- Rivers (non-impaired)

Impaired Streams (2010)

- Cl-
- Cl-, T
- E.coli
- E.coli, NO3, T
- E.coli, T
- F-IBI
- F-IBI, T
- FC
- FC, HgF, PCBF
- FC, HgF, PCBF, T
- FC, HgF, T
- FC, NO3, T
- FC, T
- FC, pH, T
- HgF
- HgF, E.coli
- HgF, E.coli, T
- HgF, FC, PCBF
- HgF, FC, PCBF, T
- HgF, HgW, FC, PCBF, PCBW, T
- HgF, HgW, FC, PCBF, T
- HgF, HgW, PCBF, PFOS, T
- HgF, PCBF
- HgF, PCBF, T
- HgF, T
- HgF, T, E.coli
- HgF, T, PCBF
- NO3
- NO3, T
- T
- T, F-IBI

Impaired Lakes (2010)

- HgF
- HgF, Nutrients
- Nutrients

0 5 10 20 30 40 Miles

Sources: Impaired Waters - MPCA; Other Features - MNDNR Data Deli

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Impaired Waters Tables

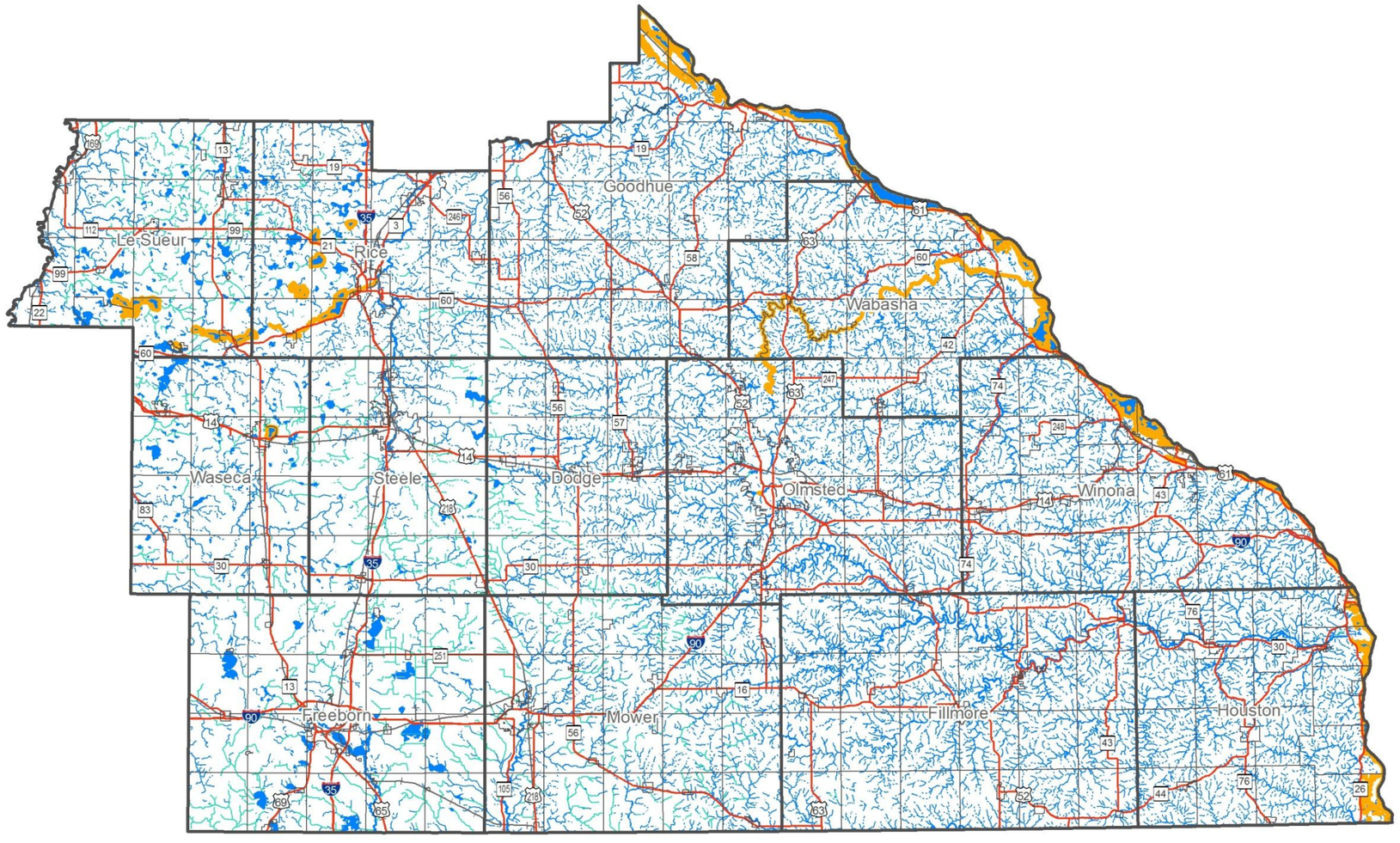
Streams		
Impairment	**Affected Use**	**Miles**
Cl-	AQL	7.3
Cl-, T	AQL	5.7
E.coli	AQR	26.1
E.coli, NO3, T	AQL, AQR, DW	12.4
E.coli, T	AQL, AQR	53.3
F-IBI	AQL	0.8
F-IBI, T	AQL	15.4
FC	AQR	166.1
FC, HgF, PCBF	AQC, AQR	24.6
FC, HgF, PCBF, T	AQC, AQL, AQR	29.4
FC, HgF, T	AQC, AQL, AQR	18.1
FC, NO3, T	AQL, AQR, DW	37.5
FC, pH, T	AQL, AQR	12.1
FC, T	AQL, AQR	246.4
HgF	AQC	127.4
HgF, E.coli	AQC, AQR	6.9
HgF, E.coli, T	AQC, AQL, AQR	4.9
HgF, FC, PCBF	AQC, AQR	28.6
HgF, FC, PCBF, T	AQC, AQL, AQR	6.2
HgF, HgW, FC, PCBF, PCBW, T	AQC, AQL, AQR	3.0
HgF, HgW, FC, PCBF, T	AQC, AQL, AQR	2.6
HgF, HgW, PCBF, PFOS, T	AQC, AQL	30.9
HgF, PCBF	AQC	77.2
HgF, PCBF, T	AQC, AQL	4.1
HgF, T	AQC, AQL	38.7
HgF, T, E.coli	AQC, AQL, AQR	11.1
HgF, T, PCBF	AQC, AQL	10.3
NO3	DW	30.2
NO3, T	AQL, DW	0.1
T	AQL	471.1
T, F-IBI	AQL	5.6
Total Miles		**1514.2**

Lakes		
Impairment	**Affected Use**	**Acres**
HgF	AQC	181
HgF, Nutrients	AQC, AQR	11,138
Nutrients	AQR	30,763
Total Area		**42,083**

Impairment Abbreviations	
Cl-	Chloride
DO	Dissolved oxygen
E.coli	Escherichia coli
FC	Fecal coliform
F-IBI	Fish - Index of Biological Integrity
HgF	Mercury in fish tissue
HgW	Mercury in water column
LCWA	Lack of a coldwater assemblage
NO3	Nitrates
PCBF	PCB in fish tissue
PCBW	PCB in water column
PFOS	Perfluorooctane Sulfate
T	Turbidity
TM	Temperature
Affected Use Abbreviations	
AQC	Aquatic consumption
AQL	Aquatic life
AQR	Aquatic recreation
DW	Drinking water

Designated Infested Waters

Southeast Landscape Region



Water Features

- Designated Infested Waters
- Lake, Pond or Reservoir; River or Stream; Innundation Area or Intermittent Water
- River
- Stream (Perennial)
- Stream (Intermittent)
- Drainage Ditch (Perennial)
- Drainage Ditch (Intermittent)

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads

0 5 10 20 30 40 Miles

Sources: Designated Infested Waters - MNDNR; Other Features - MNDNR Data Deli

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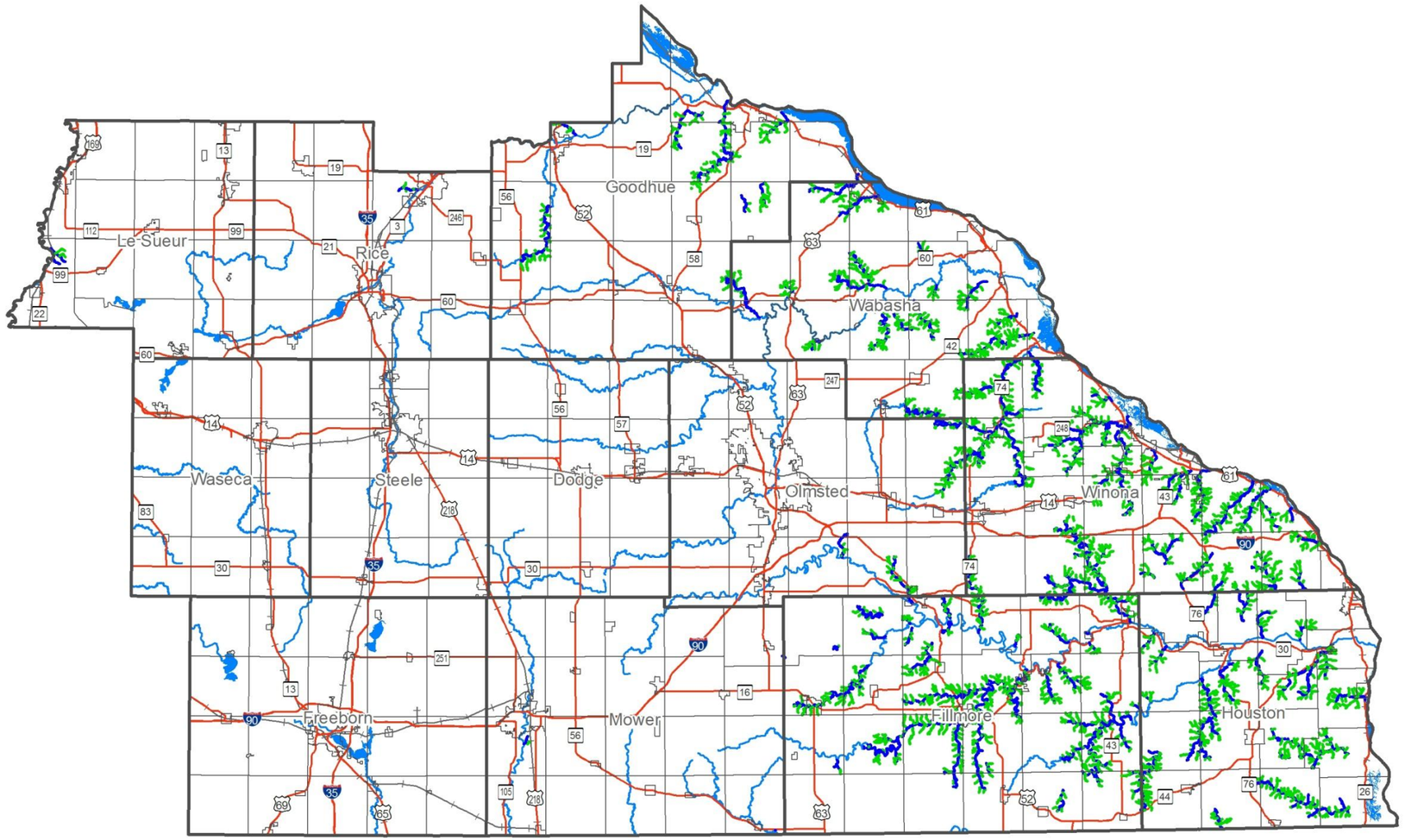
Designated Infested Waters Table

Designated Infested Waters Name	Acres
Cannon	1,592
Cannon River	84
Cedar	885
Clear	647
East Jefferson	1,159
Fox	312
French	876
George	16
German	790
Mazaska	681
Middle Jefferson	664
Mississippi River	41,818
Ray's	169
Tetonka	1,358
Upper Sakatah	892
Wells	666
Winona	307
Zumbro	715
Zumbro River	1,344
Total within Southeast Region	**54,973**

For details see the Designated Infested Waters list available at http://files.dnr.state.mn.us/eco/invasives/infested_waters.pdf

Trout Stream Designations

Southeast Landscape Region



Trout Stream Designation

- Designated Trout Stream
- Protected Tributary to Designated Trout Stream

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

Sources: Trout Streams - MNDNR Data Deli; Other Features - MNDNR Data Deli

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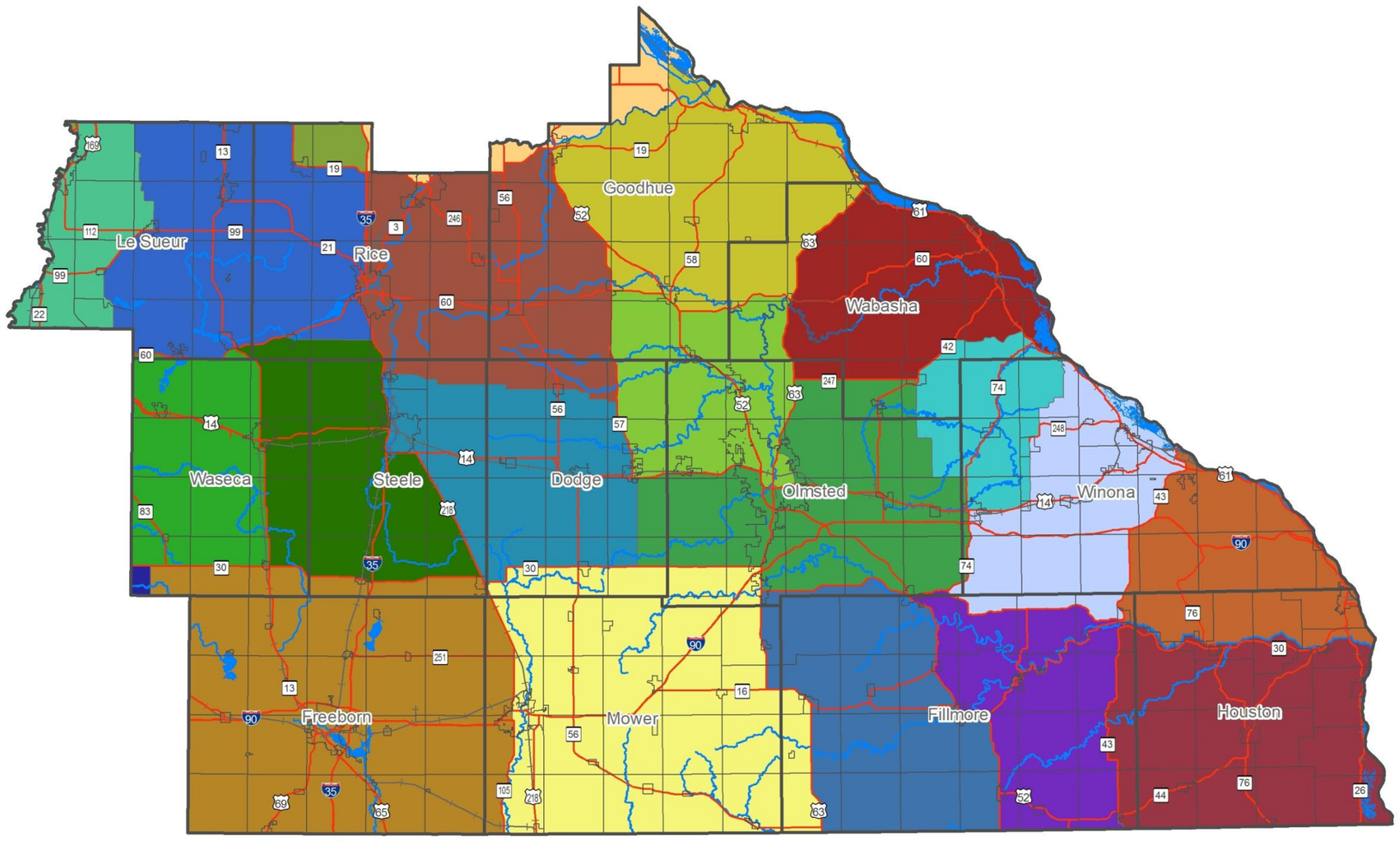
Trout Stream Designations Table

Trout Stream Designation	Miles
Designated Trout Stream	803
Protected Tributary to Designated Trout Stream	1,064
Total Miles	**1,867**

Deer Permit Areas

Southeast Landscape Region



Deer Permit Areas

- Deer Permit Area 230
- Deer Permit Area 232
- Deer Permit Area 233
- Deer Permit Area 253
- Deer Permit Area 254
- Deer Permit Area 255
- Deer Permit Area 291
- Deer Permit Area 292
- Deer Permit Area 293
- Deer Permit Area 338
- Deer Permit Area 339
- Deer Permit Area 341
- Deer Permit Area 342
- Deer Permit Area 343
- Deer Permit Area 344
- Deer Permit Area 345
- Deer Permit Area 346
- Deer Permit Area 347
- Deer Permit Area 348
- Deer Permit Area 349
- Deer Permit Area 602

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Deer Permit Areas - MNDNR Data Deli; Other Features - MNDNR Data Deli

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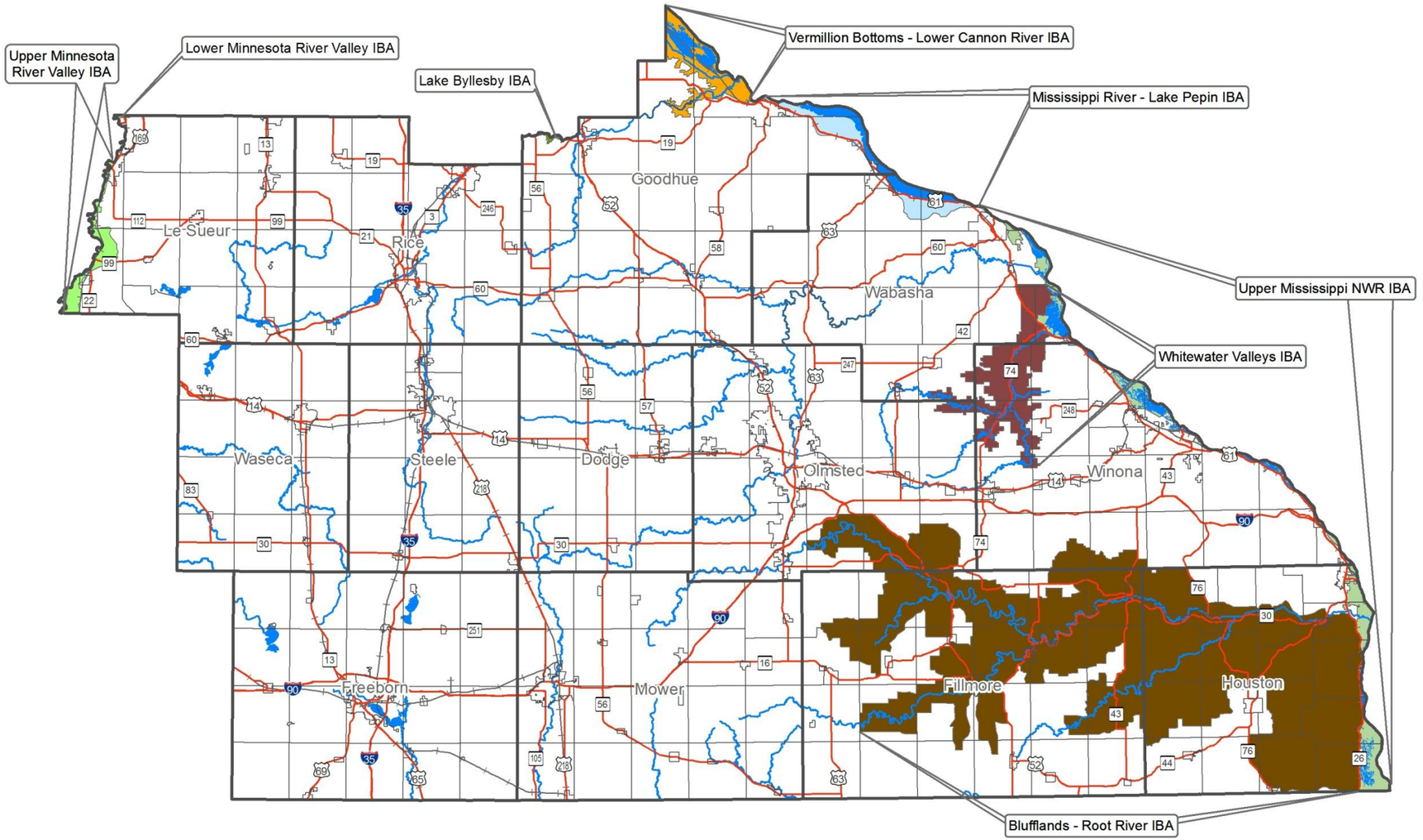
Deer Permit Areas Table

Deer Permit Area	Acres	% of Total
Deer Permit Area 230	182,388	3.7
Deer Permit Area 232	243,343	4.9
Deer Permit Area 233	247,221	5.0
Deer Permit Area 253	3,834	0.1
Deer Permit Area 254	550,690	11.1
Deer Permit Area 255	495,441	9.9
Deer Permit Area 291	110,729	2.2
Deer Permit Area 292	327,769	6.6
Deer Permit Area 293	327,730	6.6
Deer Permit Area 338	21,885	0.4
Deer Permit Area 339	47,850	1.0
Deer Permit Area 341	318,369	6.4
Deer Permit Area 342	239,259	4.8
Deer Permit Area 343	311,391	6.3
Deer Permit Area 344	121,473	2.4
Deer Permit Area 345	214,643	4.3
Deer Permit Area 346	209,836	4.2
Deer Permit Area 347	277,565	5.6
Deer Permit Area 348	212,771	4.3
Deer Permit Area 349	319,382	6.4
Deer Permit Area 602	195,858	3.9
Total Southeast Region	**4,979,428**	**100.0**

Important Bird Areas
Southeast Landscape Region



Important Bird Areas

- Blufflands - Root River IBA
- Lake Byllesby IBA
- Lower Minnesota River Valley IBA
- Mississippi River - Lake Pepin IBA
- Upper Minnesota River Valley IBA
- Upper Mississippi NWR IBA
- Vermillion Bottoms - Lower Cannon River IBA
- Whitewater Valleys IBA

Other Features

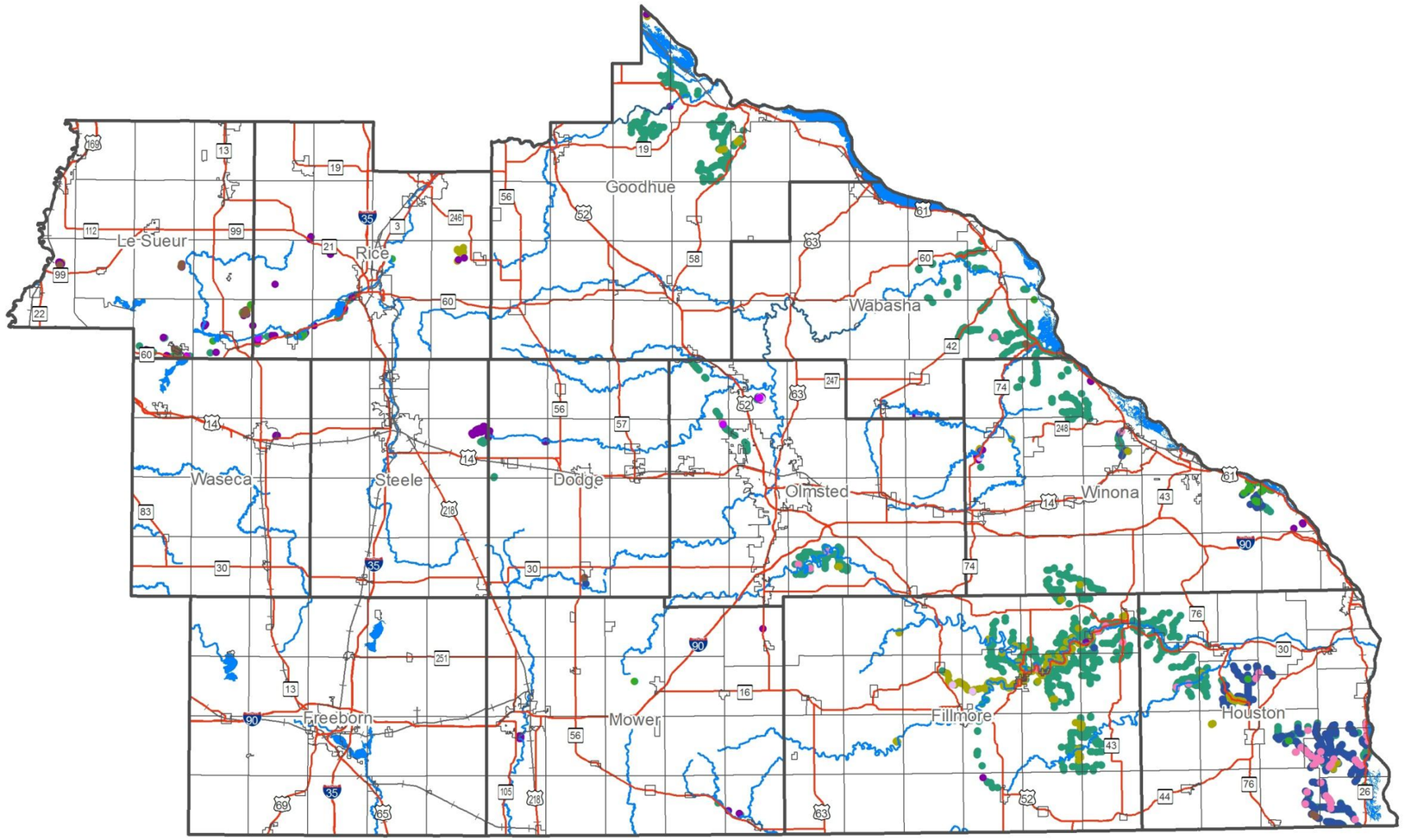
- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

Important Bird Areas Table

Important Bird Area Site Name	Acres	% of Total
Blufflands - Root River IBA	519,632	10.4
Lake Byllesby IBA	680	0.0
Lower Minnesota River Valley IBA	284	0.0
Mississippi River - Lake Pepin IBA	28,865	0.6
Upper Minnesota River Valley IBA	11,097	0.2
Upper Mississippi NWR IBA	37,800	0.8
Vermillion Bottoms - Lower Cannon River IBA	23,679	0.5
Whitewater Valleys IBA	54,766	1.1
Total Important Bird Areas	**676,804**	**13.6**
Total Southeast Region	**4,979,428**	

Terrestrial Invasive Species Observations - Noxious Weeds Control List

Southeast Landscape Region



Terrestrial Invasive Species Observations Noxious Weeds - Control List

MN DNR

- Knapweed, Spotted
- Loosestrife, Purple
- Mustard, Garlic
- Parsnip, Wild
- Spurge, Leafy
- Tansy
- Thistle, Canada
- Thistle, Musk/Nodding
- Thistle, Plumeless

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers
- ECS Subsections

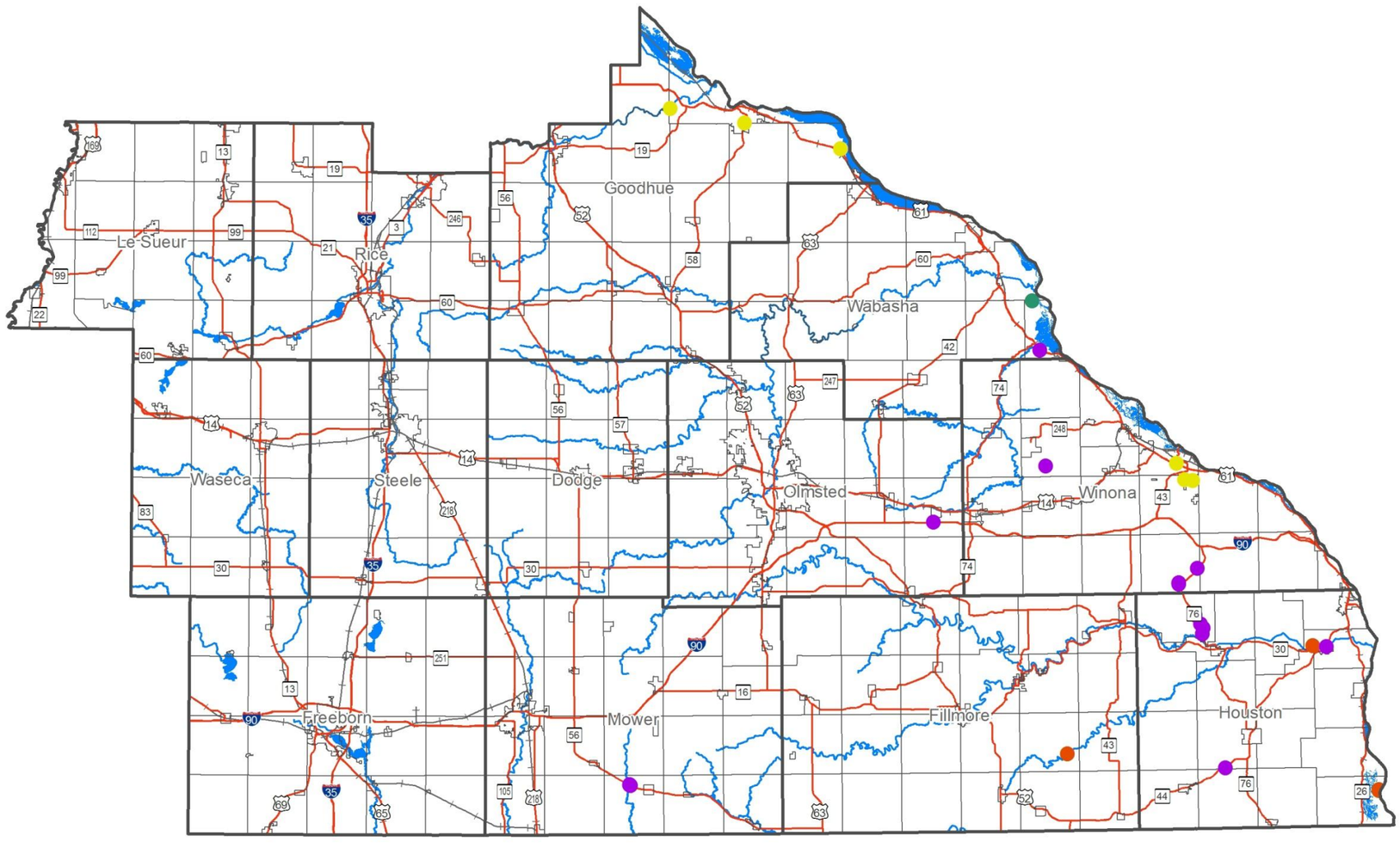
Terrestrial Invasive Species Observations - Noxious Weeds List Table

Noxious Weed List Status	Source	Species	Count
Control	MN DNR	Knapweed, Spotted	25
	MN DNR	Loosestrife, Purple	111
	MN DNR	Mustard, Garlic	371
	MN DNR	Parsnip, Wild	4124
	MN DNR	Spurge, Leafy	77
	MN DNR	Tansy	962
	MN DNR	Thistle, Canada	254
	MN DNR	Thistle, Musk/Nodding	8
	MN DNR	Thistle, Plumeless	8
Eradicate	EDD Maps	Cut-leaved Teasel	16
	EDD Maps	Japanese Hops	4
	EDD Maps	Oriental Bittersweet	6
	MN DNR	Foxglove, Grecian	1
Restricted	MN DNR	Buckthorn, Common	2921
	MN DNR	Buckthorn, Glossy	33

Observations were made between 6/17/2004 and 10/8/2013. Each observation may vary for the number of plants observed, distribution of plants, and acres infected. Separate observations may represent the same location, therefore the count of observations may over-represent the distribution of a species.

Terrestrial Invasive Species Observations - Noxious Weeds Eradicate List

Southeast Landscape Region



Terrestrial Invasive Species Observations Noxious Weeds - Eradicate List

MDA

- Cut-leaved Teasel
- Japanese Hops
- Oriental Bittersweet

MN DNR

- Foxglove, Grecian

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

Larger points are to aid in location not to indicate larger distributions.

0 5 10 20 30 40 Miles

Sources: MDA Observations - EDD Maps; MN DNR Observations - MNDNR Data Deli; Other Features - MNDNR Data Deli

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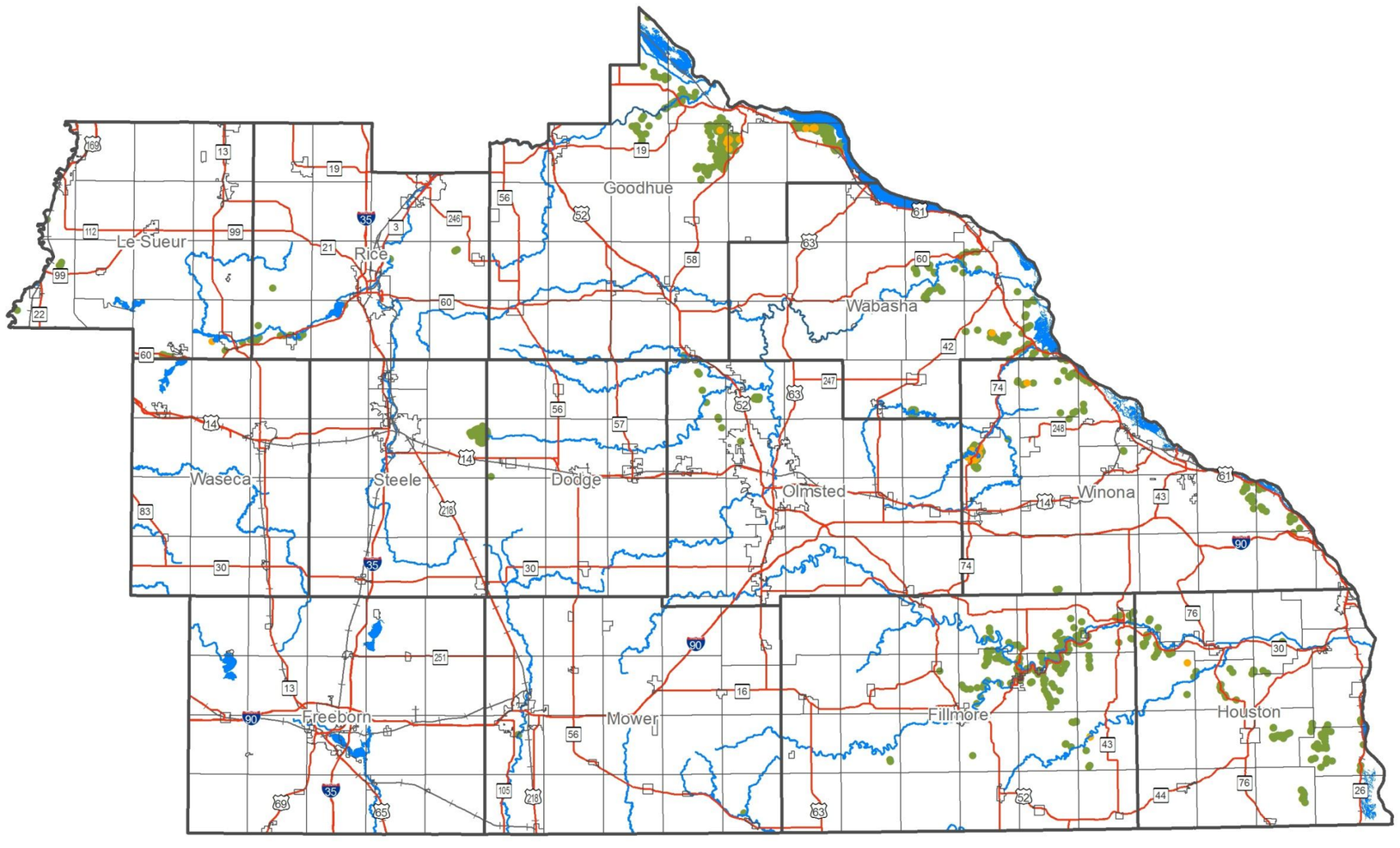
Terrestrial Invasive Species Observations - Noxious Weeds List Table

Noxious Weed List Status	Source	Species	Count
Control	MN DNR	Knapweed, Spotted	25
	MN DNR	Loosestrife, Purple	111
	MN DNR	Mustard, Garlic	371
	MN DNR	Parsnip, Wild	4124
	MN DNR	Spurge, Leafy	77
	MN DNR	Tansy	962
	MN DNR	Thistle, Canada	254
	MN DNR	Thistle, Musk/Nodding	8
	MN DNR	Thistle, Plumeless	8
Eradicate	EDD Maps	Cut-leaved Teasel	16
	EDD Maps	Japanese Hops	4
	EDD Maps	Oriental Bittersweet	6
	MN DNR	Foxglove, Grecian	1
Restricted	MN DNR	Buckthorn, Common	2921
	MN DNR	Buckthorn, Glossy	33

Observations were made between 6/17/2004 and 10/8/2013. Each observation may vary for the number of plants observed, distribution of plants, and acres infected. Separate observations may represent the same location, therefore the count of observations may over-represent the distribution of a species.

Terrestrial Invasive Species Observations - Noxious Weeds Restricted List

Southeast Landscape Region



Terrestrial Invasive Species Observations Noxious Weeds - Restricted List

MN DNR

- Buckthorn, Common
- Buckthorn, Glossy

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: MN DNR Observations - MNDNR Data Deli; Other Features - MNDNR Data Deli

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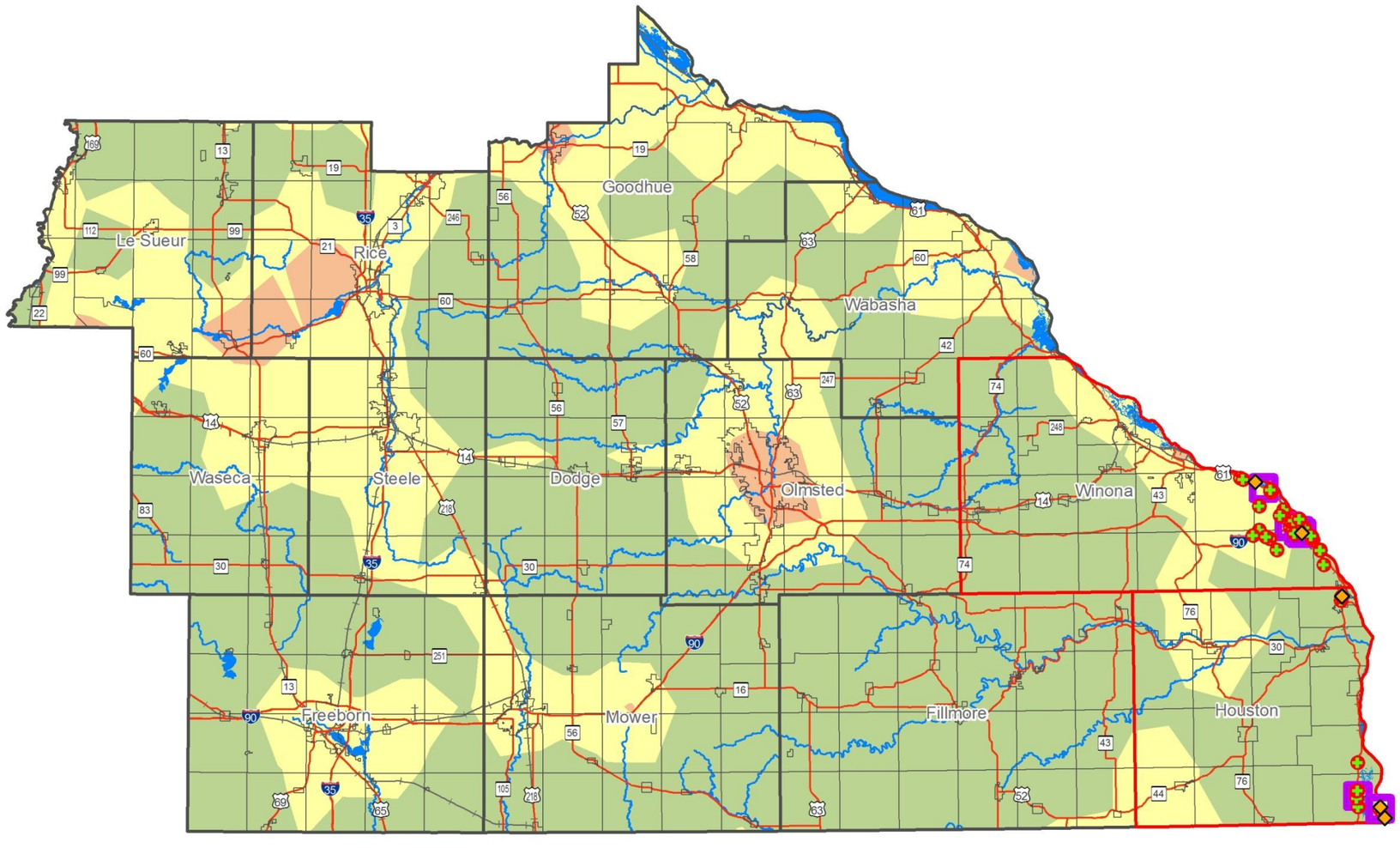
Terrestrial Invasive Species Observations - Noxious Weeds List Table

Noxious Weed List Status	Source	Species	Count
Control	MN DNR	Knapweed, Spotted	25
	MN DNR	Loosestrife, Purple	111
	MN DNR	Mustard, Garlic	371
	MN DNR	Parsnip, Wild	4124
	MN DNR	Spurge, Leafy	77
	MN DNR	Tansy	962
	MN DNR	Thistle, Canada	254
	MN DNR	Thistle, Musk/Nodding	8
	MN DNR	Thistle, Plumeless	8
Eradicate	EDD Maps	Cut-leaved Teasel	16
	EDD Maps	Japanese Hops	4
	EDD Maps	Oriental Bittersweet	6
	MN DNR	Foxglove, Grecian	1
Restricted	MN DNR	Buckthorn, Common	2921
	MN DNR	Buckthorn, Glossy	33

Observations were made between 6/17/2004 and 10/8/2013. Each observation may vary for the number of plants observed, distribution of plants, and acres infected. Separate observations may represent the same location, therefore the count of observations may over-represent the distribution of a species.

Emerald Ash Borer Introduction Risk

Southeast Landscape Region



EAB Trap Finds (2009 - 2012)

Standing Trees Found with EAB Infestation (2009 - 2013)

EAB Biological Control Sites

Quarantine Boundaries

Emerald Ash Borer Introduction Risk

Very Low

Low

Moderate

High

Very High

Other Features

County Boundaries

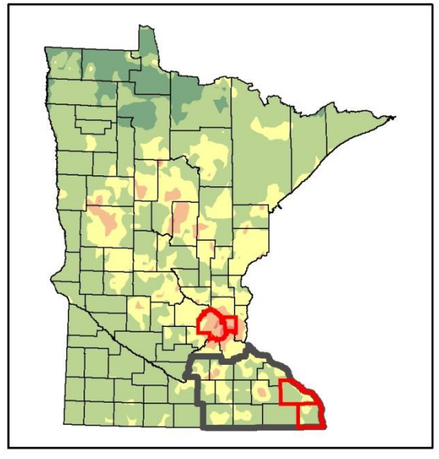
Municipal Boundaries

Highways

Railroads

Lakes

Rivers



0 5 10 20 30 40 Miles

Sources: Emerald Ash Borer Data - MDA EAB; Other Features - MNDNR Data Deli

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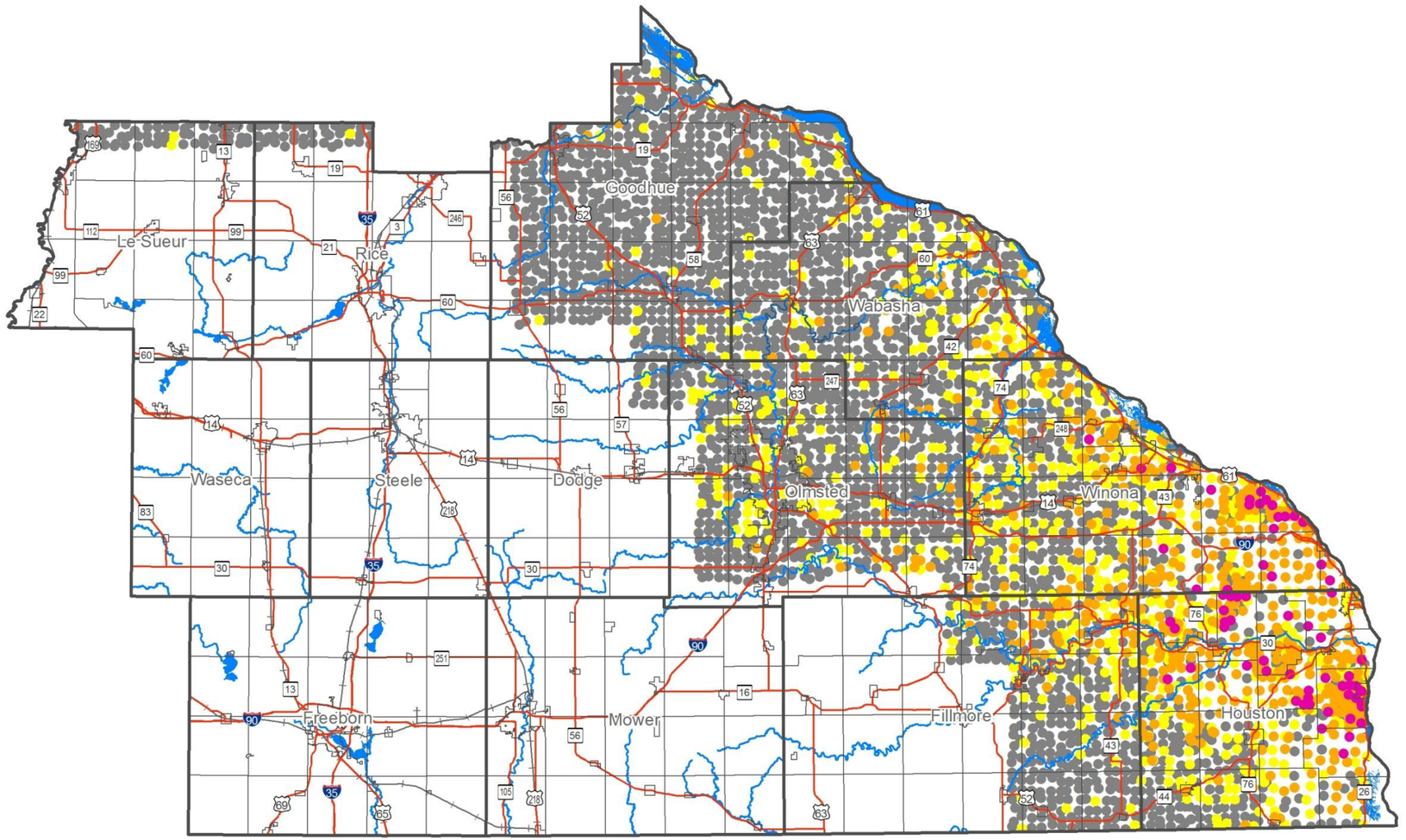
Emerald Ash Borer Introduction Risk Table

County	Item	Count
Winona	EAB Trap Finds (2009 - 2012)	2
	Standing Trees Found with EAB Infestation (2009 - 2013)	71
	EAB Biological Control Sites	4
Houston	EAB Trap Finds (2009 - 2012)	3
	Standing Trees Found with EAB Infestation (2009 - 2013)	19
	EAB Biological Control Sites	2

Gypsy Moth Trapping Results (2008)

Southeast Landscape Region



Gypsy Moth Trapping Results (2008)

- 0
- 1
- 2 - 5
- 6 - 15
- 16 - 95
- 96 - 1396

Classes are from statewide data range.

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

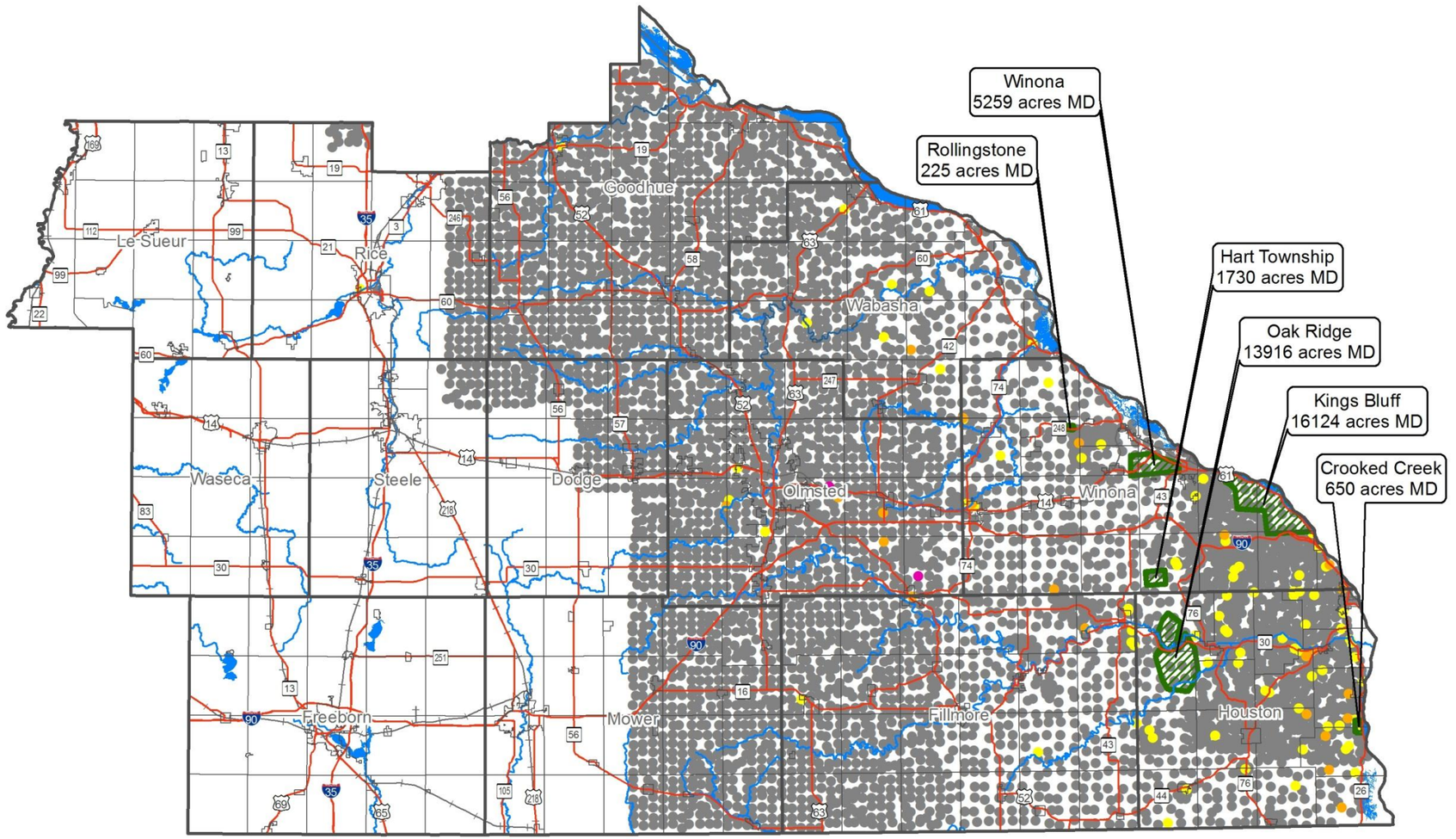
Gypsy Moth Trapping Results (2008) Tables

County	Trap Catch Results (2008)
Dodge	2
Fillmore	196
Freeborn	0
Goodhue	42
Houston	1,374
Le Sueur	2
Mower	0
Olmsted	148
Rice	1
Steele	0
Wabasha	153
Waseca	0
Winona	954
Total Southeast Region	**2,872**

Year	Southeast Region Trap Catch Results
2002	21
2003	213
2004	34
2005	7
2006	10
2007	321
2008	2,872
2009	166
2010	248
2011	122
2012	34
2013	184

Gypsy Moth Trapping Results (2009)

Southeast Landscape Region



Gypsy Moth Treatments (2009)

MD = Mating Disruptant Treatment

Gypsy Moth Trapping Results (2009)

- 0
- 1
- 2 - 5
- 6 - 15
- 16 - 95
- 96 - 1396

Classes are from statewide data range.

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Gypsy Moth Trapping/Treatment - MDA Gypsy Moth Program; Other Features - MNDNR Data Deli

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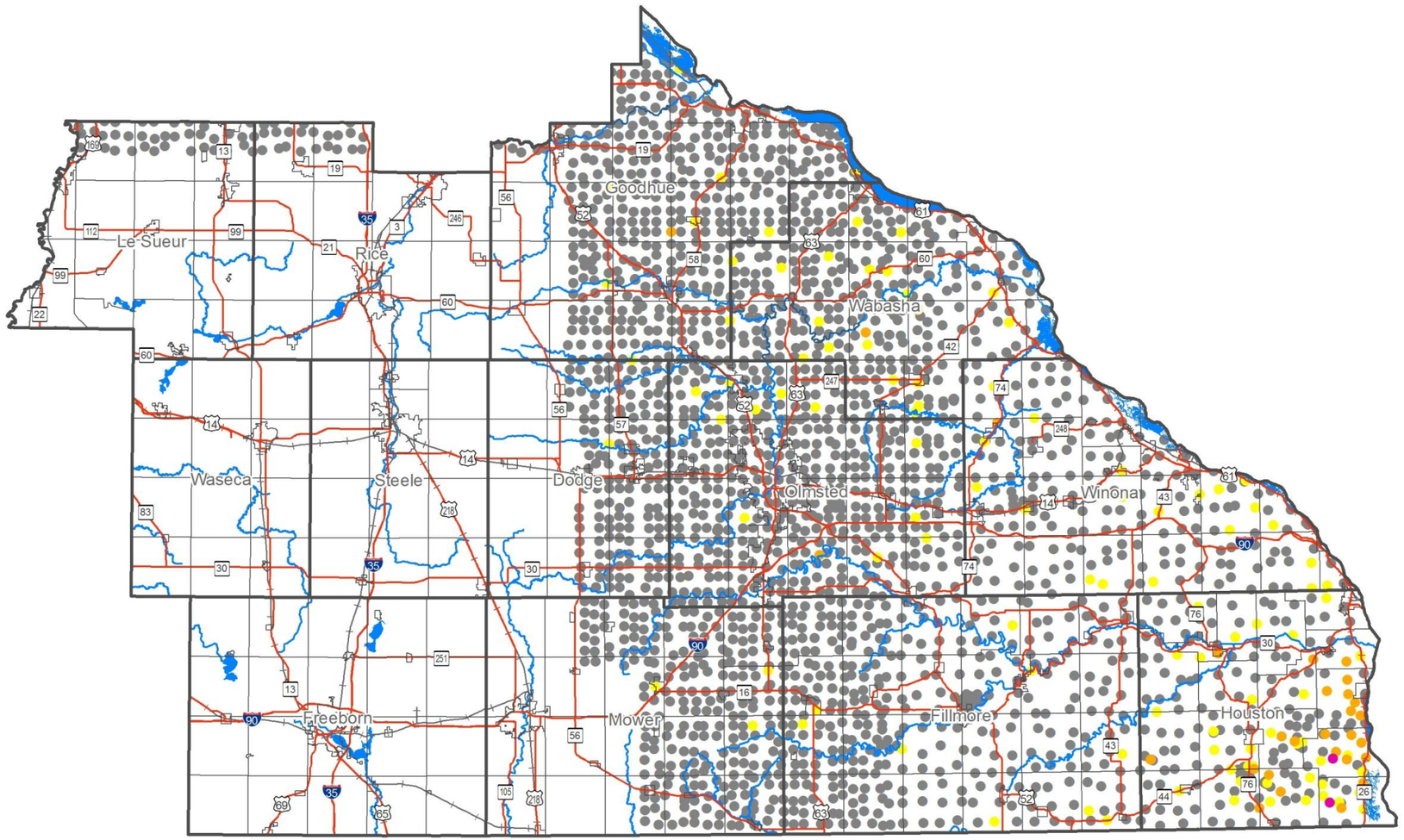
Gypsy Moth Trapping Results (2009) Table

County	Trap Catch Results (2009)
Dodge	0
Fillmore	13
Freeborn	0
Goodhue	1
Houston	75
Le Sueur	0
Mower	0
Olmsted	28
Rice	1
Steele	0
Wabasha	9
Waseca	0
Winona	39
Total Southeast Region	**166**

Year	Southeast Region Trap Catch Results
2002	21
2003	213
2004	34
2005	7
2006	10
2007	321
2008	2,872
2009	166
2010	248
2011	122
2012	34
2013	184

Gypsy Moth Trapping Results (2013)

Southeast Landscape Region



Gypsy Moth Trapping Results (2013)

- 0
- 1
- 2 - 5
- 6 - 15
- 16 - 95
- 96 - 1396

Classes are from statewide data range.

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Gypsy Moth Trapping/Treatment - MDA Gypsy Moth Program; Other Features - MNDNR Data Deli

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Minnesota Forest Resources Council

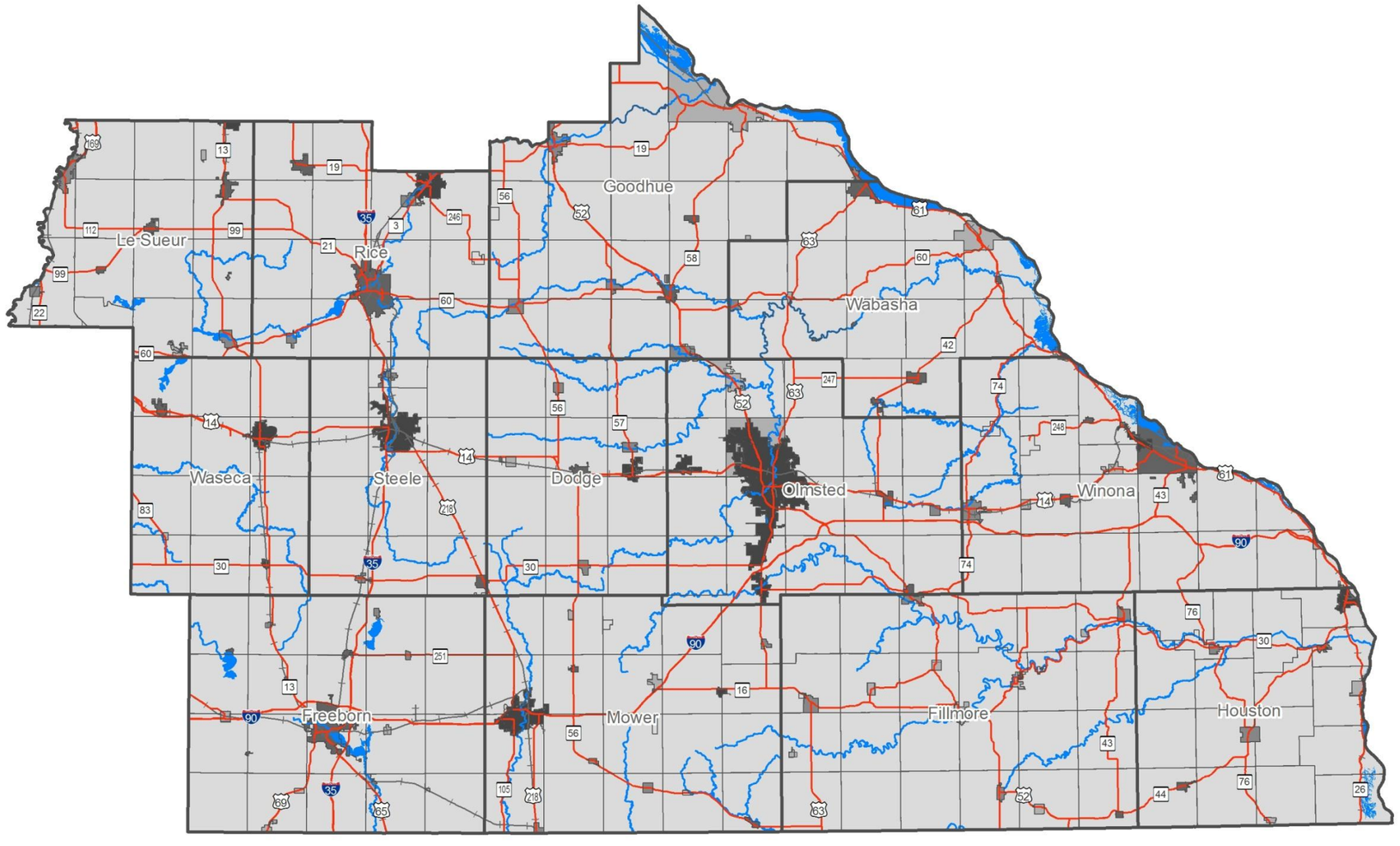
Gypsy Moth Trapping Results (2013) Table

County	Trap Catch Results (2013)
Dodge	1
Fillmore	9
Freeborn	0
Goodhue	12
Houston	102
Le Sueur	0
Mower	3
Olmsted	13
Rice	0
Steele	0
Wabasha	22
Waseca	0
Winona	22
Total Southeast Region	**184**

Year	Southeast Region Trap Catch Results
2002	21
2003	213
2004	34
2005	7
2006	10
2007	321
2008	2,872
2009	166
2010	248
2011	122
2012	34
2013	184

2010 US Census Population Density

Southeast Landscape Region



Population Density (persons/sq mi)

- 0 - 208
- 209 - 621
- 622 - 1101
- 1102 - 1656
- 1657 - 2687

Classes by natural breaks

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Population Density - US Census; Other Features - MNDNR Data Deli

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Minnesota Forest Resources Council

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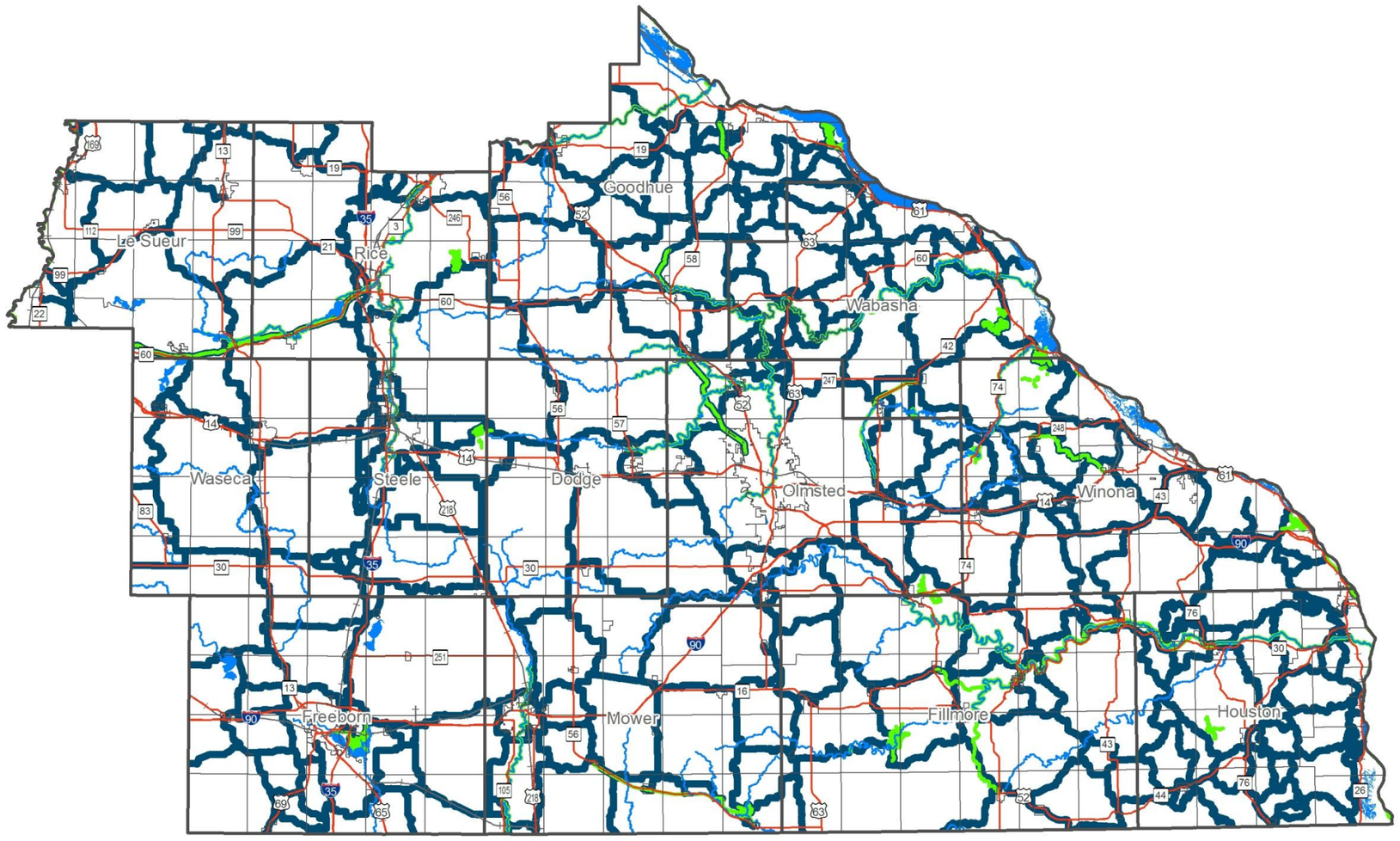
Trails

Southeast Landscape Region



Trails

- Trails - All
- Snowmobile Trails

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Trails - MNDNR Data Deli; Other Features - MNDNR Data Deli

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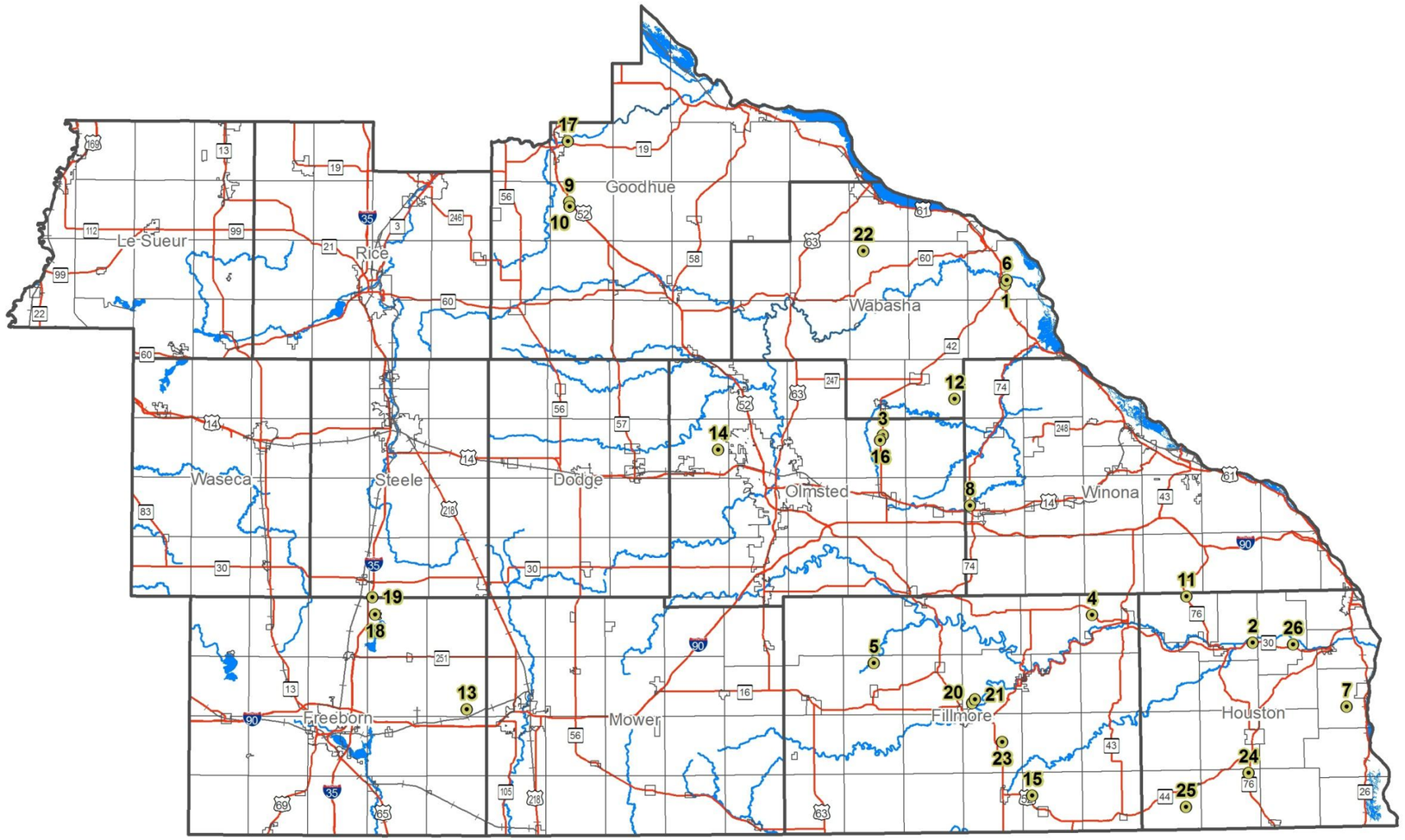
Sawmills (2007)

Southeast Landscape Region



Sawmills (2007)

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Sawmills - MNDOA Sawmills; Other Features - MNDNR Data Deli

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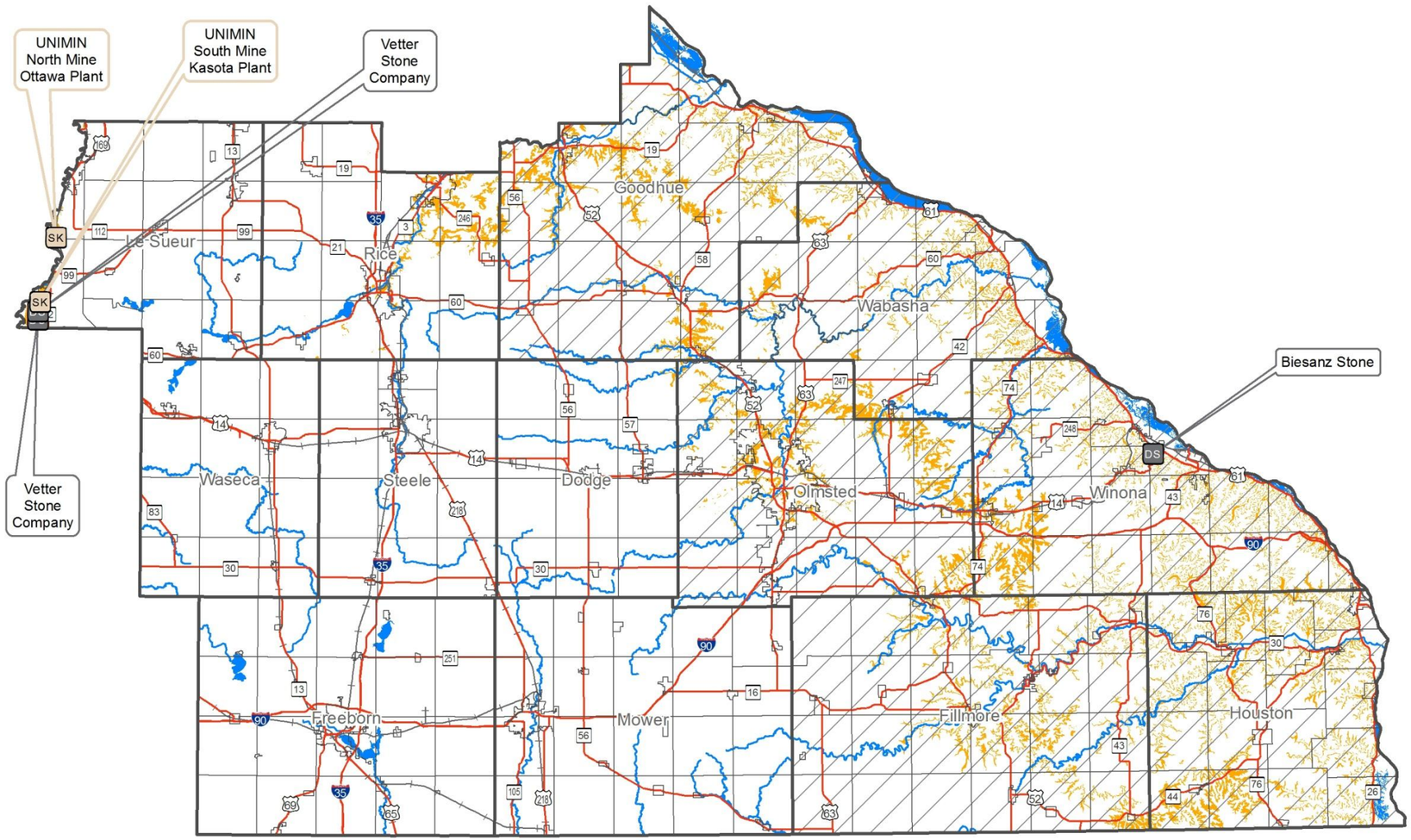
Sawmills (2007) Table

Sawmill Name	Map Number	County
Axley Bros. Inc.	1	Wabasha
Crystal Valley Hardwoods	2	Houston
Edgewood Lumber	3	Olmsted
Ellefson Mill	4	Fillmore
Fillmore Sawmill	5	Fillmore
G & G Logging	6	Wabasha
Holzwarth Mill	7	Houston
Jilk (Pete) Mill	8	Winona
Johnson Logging Inc.- Mill	9	Goodhue
Johnson Logging Inc.- Residence/Woodyard	10	Goodhue
Jordan (John) Mill	11	Houston
Kolb - Jeff Mill	12	Wabasha
Len's Wood Products	13	Freeborn
Logan (Mike) Mill	14	Olmsted
Mattson (Lynn) Mill	15	Fillmore
Mulholland Logging	16	Olmsted
Northern Hardwood	17	Goodhue
Richards Wood Products	18	Freeborn
Richards Wood Products	19	Steele
Root River Hardwoods	20	Fillmore
Root River Hardwoods - Woodyard	21	Fillmore
Schuman (Dick) Mill	22	Wabasha
Scotland Sawmill	23	Fillmore
Staggemeyer Stave Co.	24	Houston
Thomas (Gary) Mill	25	Houston
Tri - State Forest Products	26	Houston

Mining Activity and Silica Sand Potential

Southeast Landscape Region



Active Mines (January 2014)

- DS Dimension Stone
- SK Silica Sand

Counties with many limestone crushed stone quarries

Quartz-rich sandstone (industrial silica sand) within 50 feet of land surface

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Mining - MNDNR LAM; Quartz-rich sandstone - MGS; Other Features - MNDNR Data Deli

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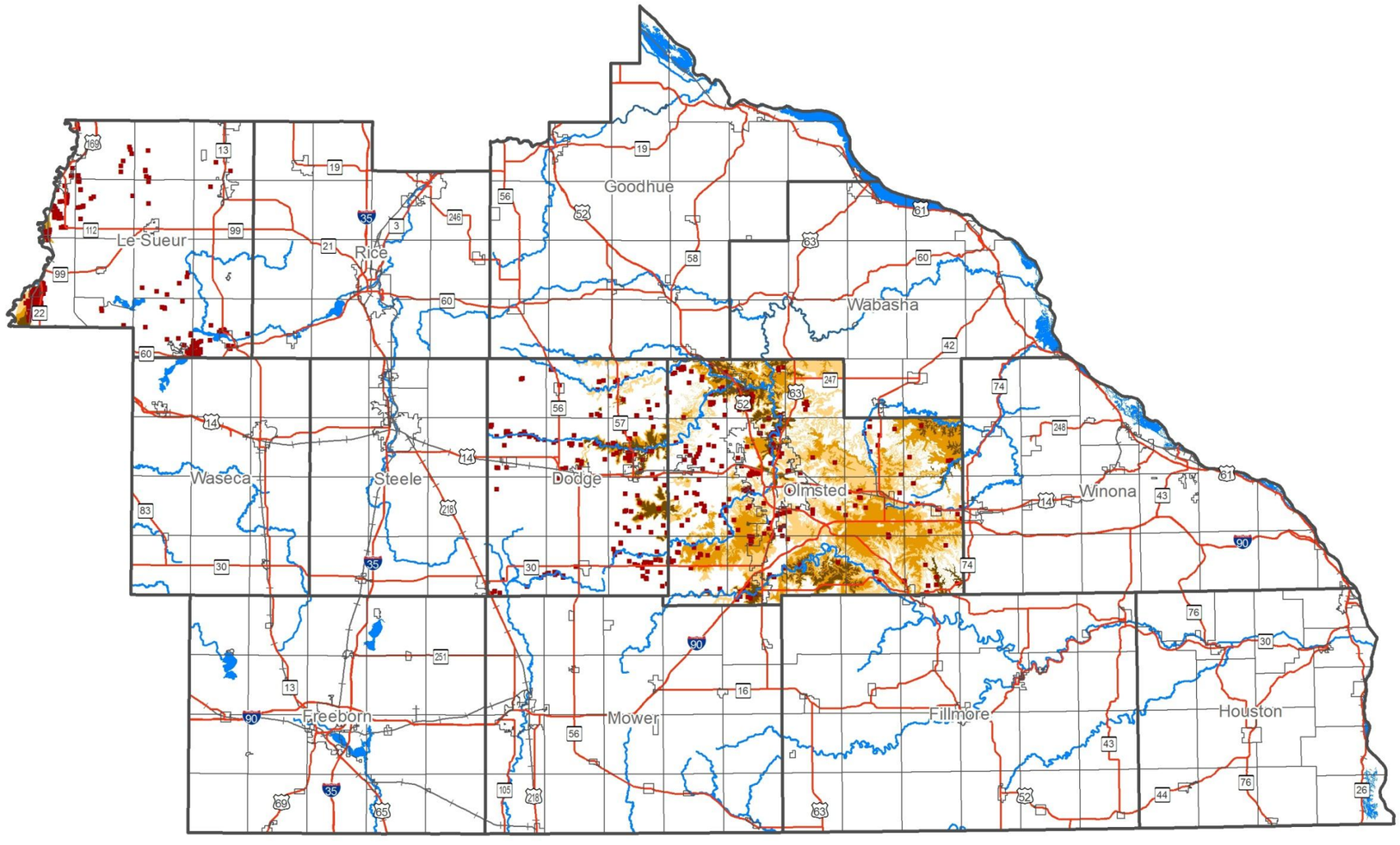
Mining Activity and Silica Sand Tables

County	Mine Name or Company	Mineral Type	Commodity	Mine/Plant
Le Sueur	Vetter Stone Company	Dimension Stone	Limestone	Mine
Le Sueur	Vetter Stone Company	Dimension Stone	Limestone	Mine
Winona	Biesanz	Dimension Stone	Limestone	Mine
Le Sueur	UNIMIN North Mine - Ottawa Plant	Silica Sand	Industrial Silica Sand	Mine and Plant
Le Sueur	UNIMIN South Mine - Kasota Plant	Silica Sand	Industrial Silica Sand	Mine and Plant

County	Acres	Acres of quartz-rich sandstone w/in 50 feet of surface	High amount of limestone crushed stone quarries
Dodge	281,164	567	No
Fillmore	551,460	31,887	Yes
Freeborn	461,960	0	No
Goodhue	499,093	44,432	Yes
Houston	363,942	51,945	Yes
Le Sueur	303,022	4,430	No
Mower	455,010	0	No
Olmsted	418,743	39,068	Yes
Rice	329,914	14,802	No
Steele	276,476	0	No
Wabasha	351,374	25,324	Yes
Waseca	276,947	3	No
Winona	410,324	46,889	Yes
Total Southeast Region	**4,979,428**	**259,346**	

Aggregate Resource Mapping Program – Crushed Stone

Southeast Landscape Region



Aggregate Resource Mapping Program Crushed Stone

- Aggregate Mining Locations - Quarry, Gravel Pit, Sand Pit, Borrow Pit, Prospects
- High Potential for Crushed Stone Resources
- Moderate Potential for Crushed Stone Resources
- Low Potential for Crushed Stone Resources

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Aggregate Resource Mapping Program - MNDNR LAM Aggregate; Other Features - MNDNR Data Deli

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Minnesota Forest Resources Council

Aggregate Resource Mapping Program – Crushed Stone Table

County	Aggregate Potential	Acres	% of Total
Dodge	High Potential for Crushed Stone Resources	8,225	2.9
	Moderate Potential for Crushed Stone Resources	4,878	1.7
	Low Potential for Crushed Stone Resources	9,296	3.3
Total Crushed Stone Resources Potential		**22,398**	**8.0**
Total County Area		**281,164**	

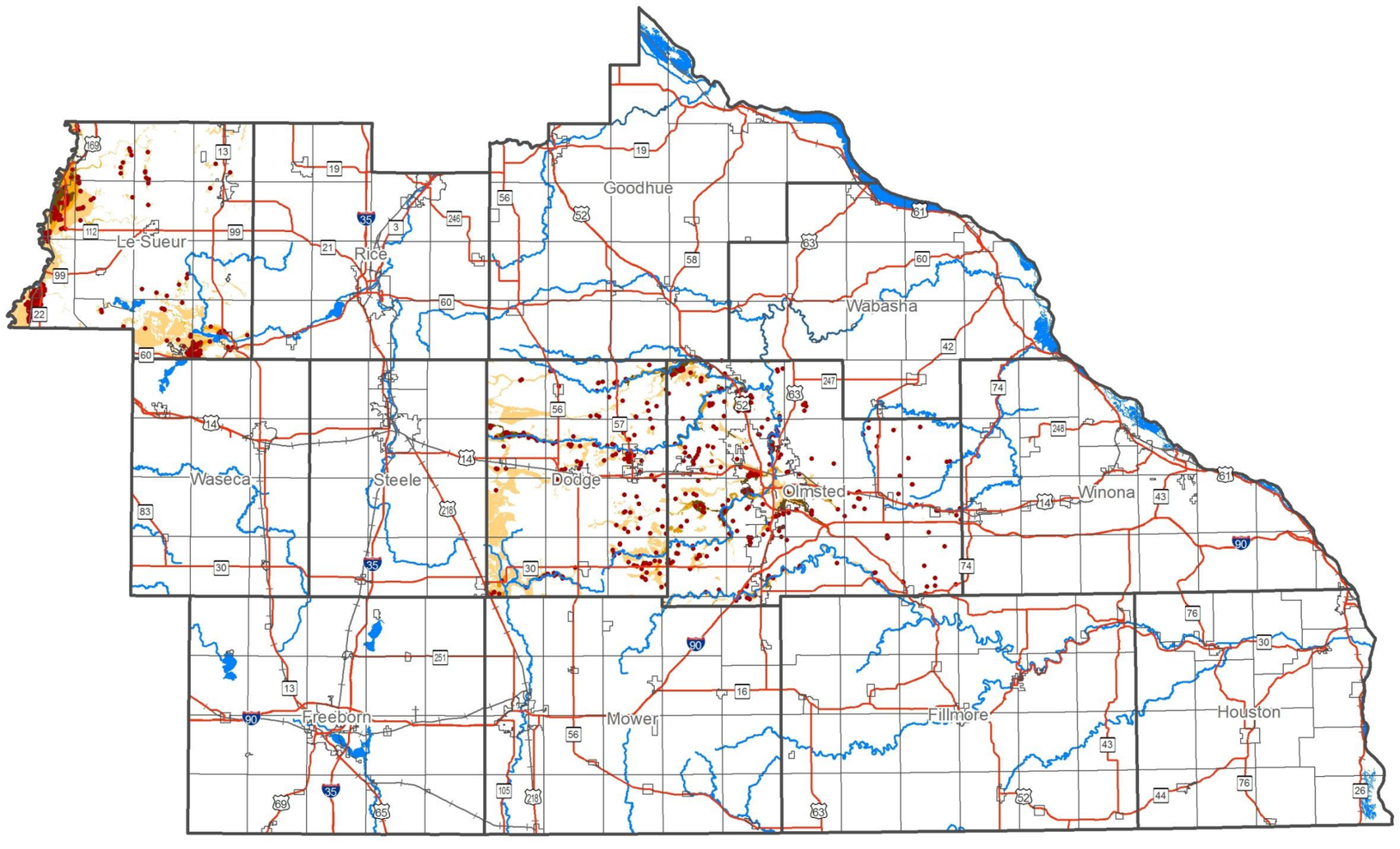
County	Aggregate Potential	Acres	% of Total
Le Sueur	High Potential for Crushed Stone Resources	813	0.3
	Moderate Potential for Crushed Stone Resources	2,553	0.8
	Low Potential for Crushed Stone Resources	1,360	0.4
Total Crushed Stone Resources Potential		**4,726**	**1.6**
Total County Area		**303,022**	

County	Aggregate Potential	Acres	% of Total
Olmsted	High Potential for Crushed Stone Resources	25,244	6.0
	Moderate Potential for Crushed Stone Resources	90,610	21.6
	Low Potential for Crushed Stone Resources	113,372	27.1
Total Crushed Stone Resources Potential		**229,226**	**54.7**
Total County Area		**418,743**	

County	Aggregate Resource Mapping Activity	Aggregate Mining Locations
Dodge	Completed 2002	169
Fillmore	None planned	no data available
Freeborn	None planned	no data available
Goodhue	None planned	no data available
Houston	None planned	no data available
Le Sueur	Completed 2003	326
Mower	None planned	no data available
Olmsted	Completed 2010	270
Rice	None planned	no data available
Steele	None planned	no data available
Wabasha	None planned	no data available
Waseca	None planned	no data available
Winona	None planned	no data available

Aggregate Resource Mapping Program – Sand & Gravel

Southeast Landscape Region



Aggregate Resource Mapping Program Sand & Gravel

- Aggregate Mining Locations - Quarry, Gravel Pit, Sand Pit, Borrow Pit, Prospects
- High Potential for Sand and Gravel Resources
- Moderate Potential for Sand and Gravel Resources
- Low Potential for Sand and Gravel Resources

Other Features

- County Boundaries
- Municipal Boundaries
- Highways
- Railroads
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: Aggregate Resource Mapping Program - MNDNR LAM Aggregate; Other Features - MNDNR Data Deli

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Minnesota Forest Resources Council

Aggregate Resource Mapping Program – Sand & Gravel Table

County	Aggregate Potential	Acres	% of Total
Dodge	High Potential for Sand and Gravel Resources	1,813	0.6
	Moderate Potential for Sand and Gravel Resources	3,219	1.1
	Low Potential for Sand and Gravel Resources	46,507	16.5
Total Sand and Gravel Resources Potential		**51,539**	**18.3**
Total County Area		**281,164**	

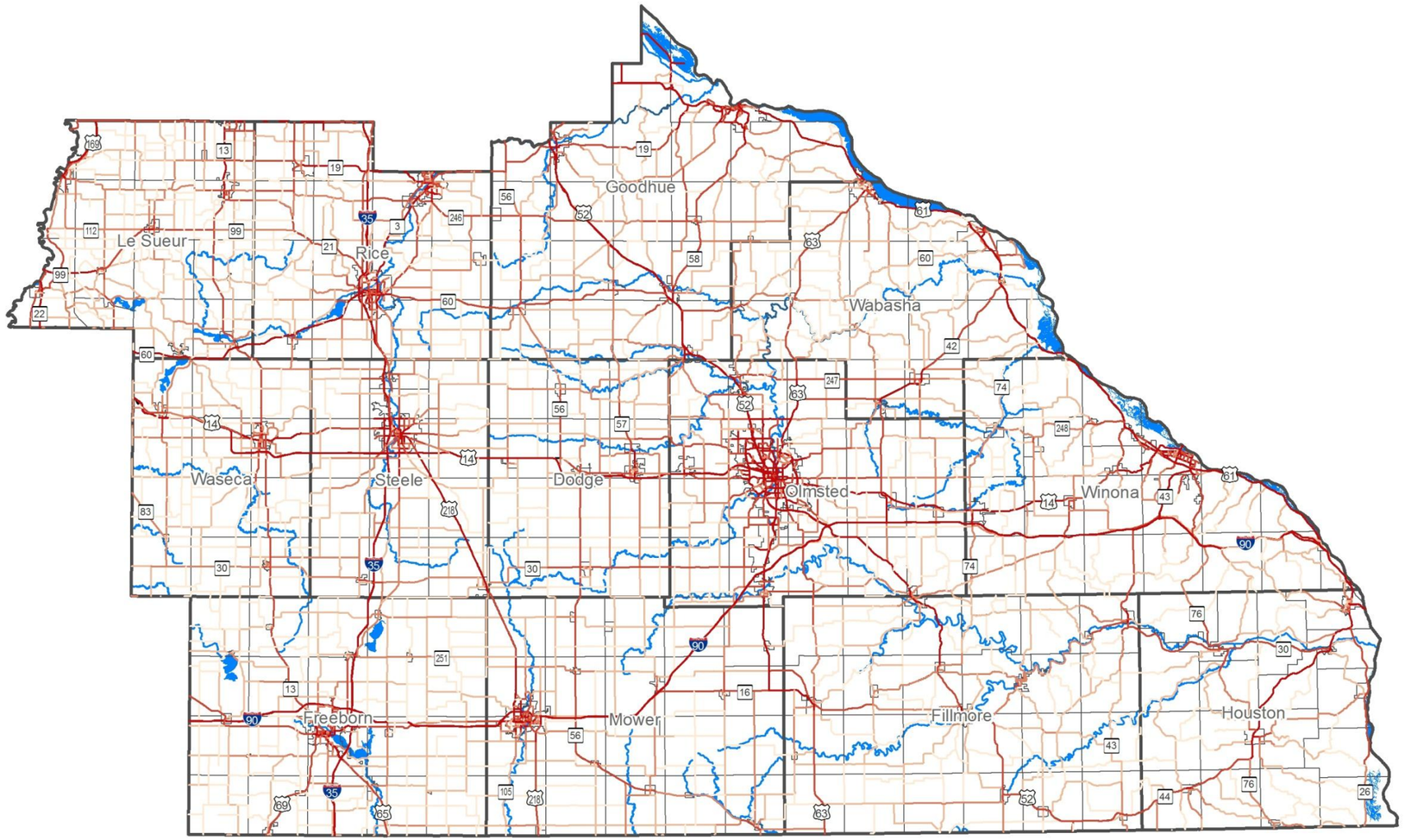
County	Aggregate Potential	Acres	% of Total
Le Sueur	High Potential for Sand and Gravel Resources	4,418	1.5
	Moderate Potential for Sand and Gravel Resources	7,878	2.6
	Low Potential for Sand and Gravel Resources	37,966	12.5
Total Sand and Gravel Resources Potential		**50,263**	**16.6**
Total County Area		**303,022**	

County	Aggregate Potential	Acres	% of Total
Olmsted	High Potential for Sand and Gravel Resources	8,633	2.1
	Moderate Potential for Sand and Gravel Resources	10,087	2.4
	Low Potential for Sand and Gravel Resources	21,127	5.0
Total Sand and Gravel Resources Potential		**39,847**	**9.5**
Total County Area		**418,743**	

County	Aggregate Resource Mapping Activity	Aggregate Mining Locations
Dodge	Completed 2002	169
Fillmore	None planned	no data available
Freeborn	None planned	no data available
Goodhue	None planned	no data available
Houston	None planned	no data available
Le Sueur	Completed 2003	326
Mower	None planned	no data available
Olmsted	Completed 2010	270
Rice	None planned	no data available
Steele	None planned	no data available
Wabasha	None planned	no data available
Waseca	None planned	no data available
Winona	None planned	no data available

Annual Average Daily Traffic

Southeast Landscape Region



Annual Average Daily Traffic (2008 - 2012)

- 5 - 250
- 251 - 670
- 671 - 1550
- 1551 - 4000
- 4001 - 82000

Class breaks by quantile.

- No Data Available

Other Features

- County Boundaries
- Municipal Boundaries
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: AADT - MNDOT; Other Features - MNDNR Data Deli

N

Minnesota Forest Resources Council

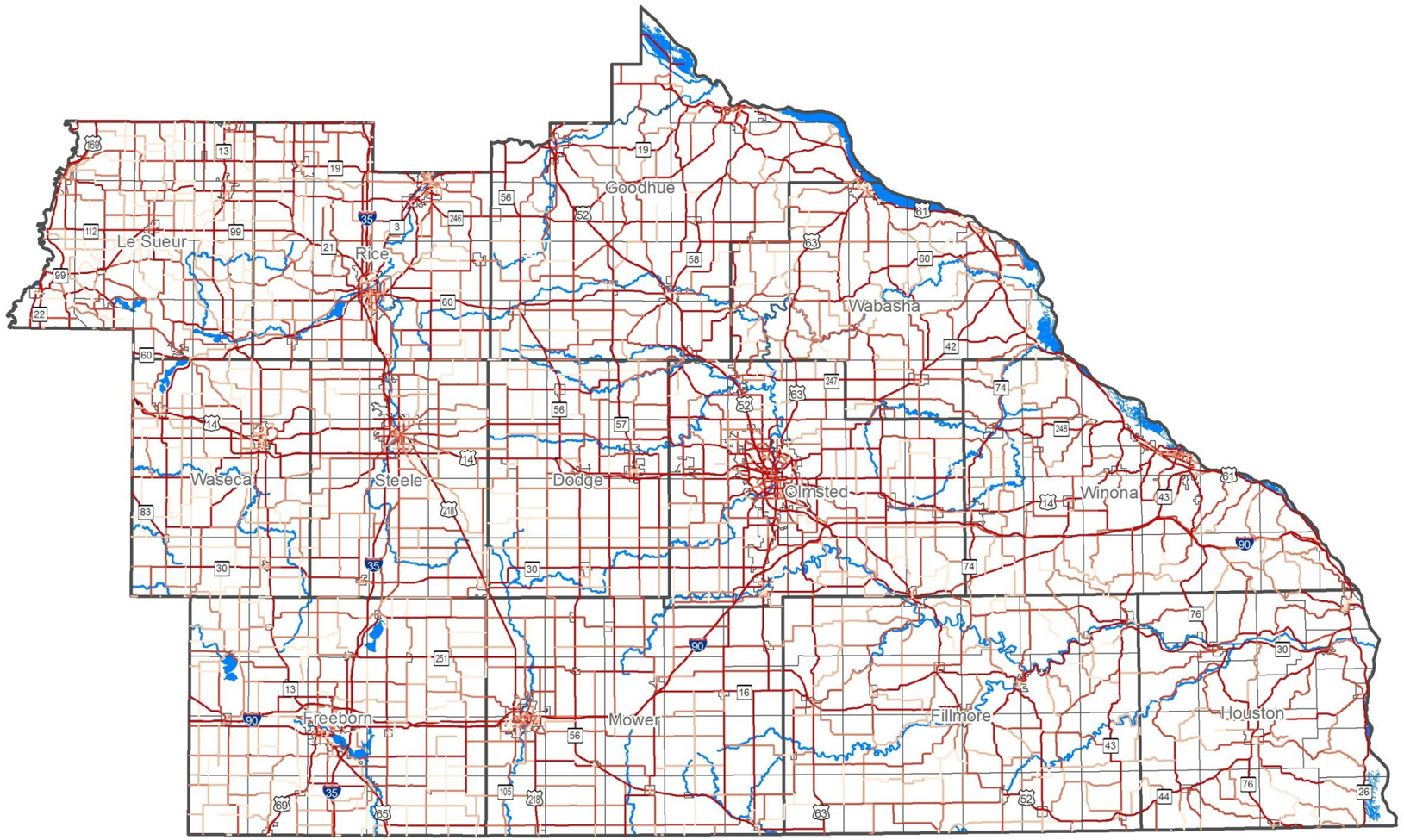
Annual Average Daily Traffic Table

Route Type	Annual Average Daily Traffic
Interstate	1,063,200
US Highway	2,772,700
MN Highway	1,556,330
County State Aid Highway	2,857,645
Municipal State Aid Street	3,198,815
County Road	294,810
Township Road	13,615
Municipal Street	89,410
Total	**11,846,525**

Annual Average Daily Traffic (AADT) is the number of vehicles that travel a section of road per day (averaged for 365 days in one year). MNDOT measures traffic for road sections every 2-4 years. Note that AADT is per section of road. If more sections of road exist for a Route Type, more AADT will be reported for that Route Type in the table above. For a normalized comparison of the amount of traffic on each route type, refer to the Annual Average Daily Vehicle Miles Traveled.

Annual Average Daily Vehicle Miles Traveled

Southeast Landscape Region



Annual Average Daily Vehicle Miles Traveled (2008 - 2012)

- 0.05 - 207.08
- 207.09 - 539.92
- 539.93 - 1270.18
- 1270.19 - 3291.26
- 3291.27 - 454674.46

Class breaks by quantile.

- No Data Available

Other Features

- County Boundaries
- Municipal Boundaries
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: AAD VMT - MNDOT; Other Features - MNDNR Data Deli

N

Minnesota Forest Resources Council

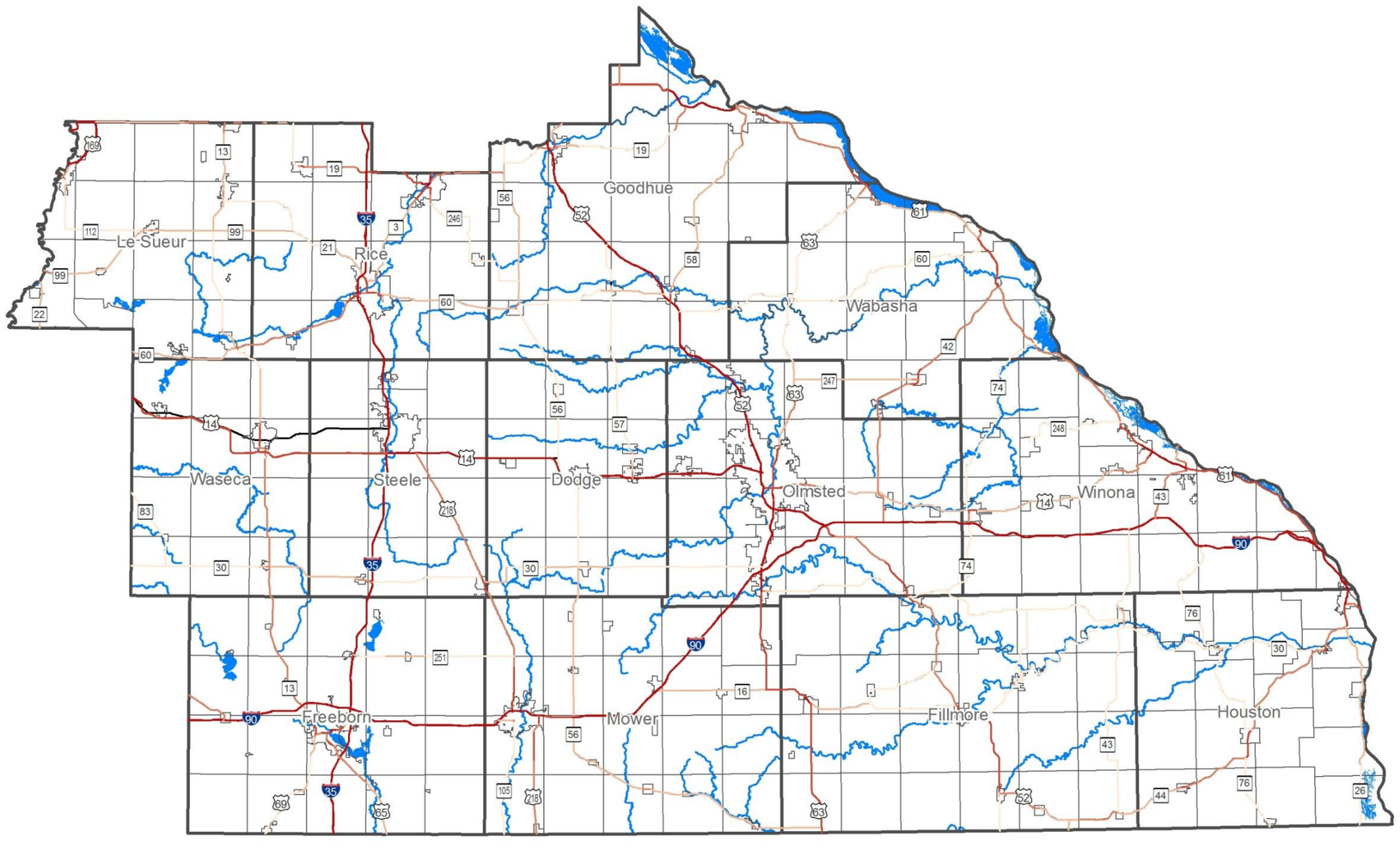
Annual Average Daily Vehicle Miles Traveled Table

Route Type	Length (miles)	Annual Average Daily Vehicle Miles Traveled
Interstate	415.2	7,048,944
US Highway	688.2	7,808,147
MN Highway	961.9	2,588,087
County State Aid Highway	4039.8	3,638,322
Municipal State Aid Street	296.0	1,227,592
County Road	1381.1	350,190
Township Road	18.9	13,356
Municipal Street	11.5	23,666
Total	**7812.6**	**22,698,305**

Annual Average Daily Vehicle Miles Traveled (AAD VMT) is the number of vehicles that travel a section of road per day (averaged for 365 days in one year) multiplied by the length of the section of road. If 2 vehicles traveled a 2 mile section of road every day over the course of one year, the AAD VMT for that section of road would be 4. The AAD VMT should be used when comparing routes for traffic volume given that it provides a normalized comparison for traffic measurements (the Annual Average Daily Traffic count can be skewed by the presence of multiple sections of a Route Type).

Heavy Commercial Annual Average Daily Traffic

Southeast Landscape Region



Heavy Commercial Annual Average Daily Traffic (2008 - 2012)

- 5 - 155
- 156 - 280
- 281 - 445
- 446 - 860
- 861 - 5900

Class breaks by quantile.

- No Data

Other Features

- County Boundaries
- Municipal Boundaries
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: HCAADT - MNDOT; Other Features - MNDNR Data Deli

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Minnesota Forest Resources Council

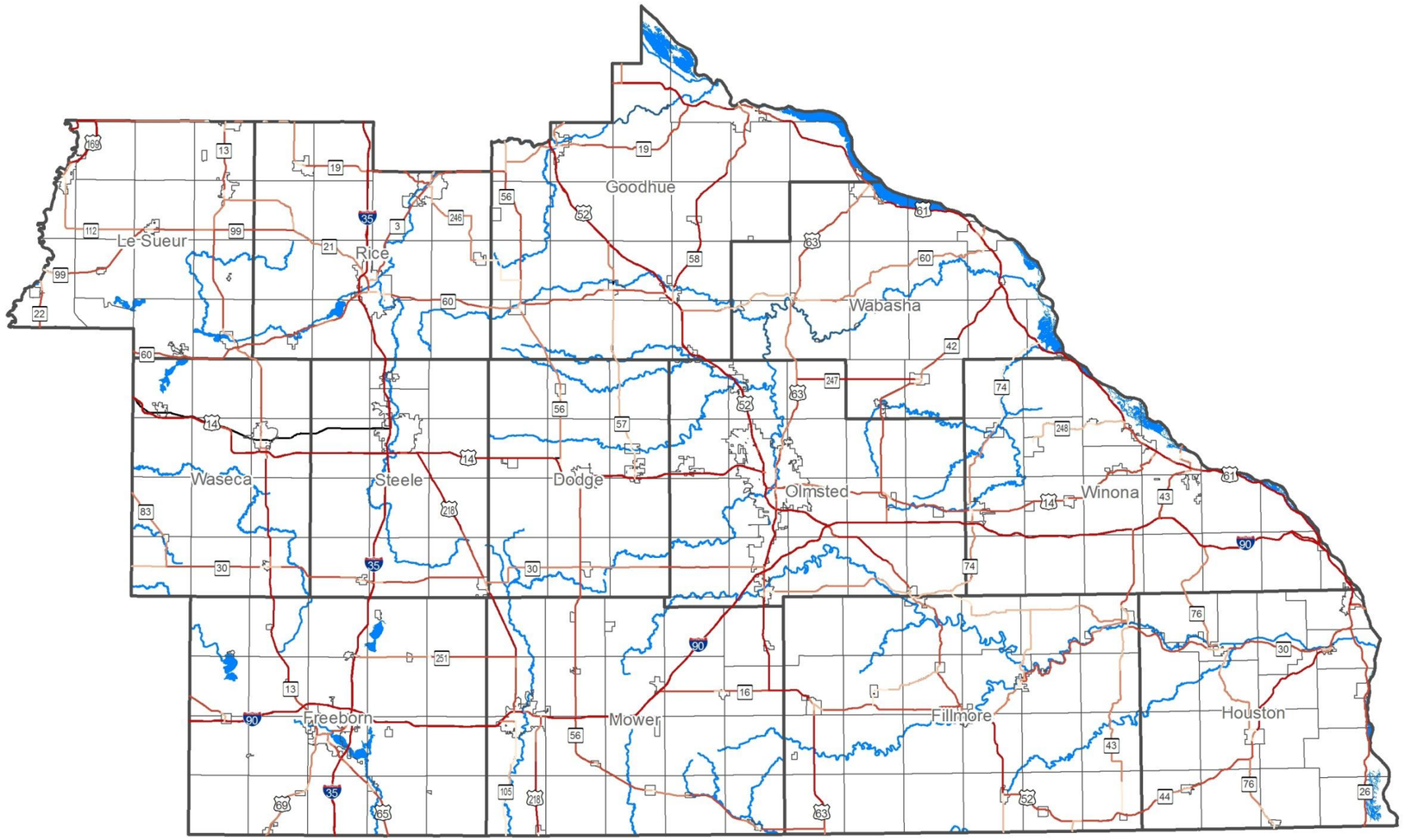
Heavy Commercial Annual Average Daily Traffic Table

Route Type	Heavy Commercial Annual Average Daily Traffic
Interstate	160,880
US Highway	182,955
MN Highway	104,960
Total	**448,795**

Heavy Commercial Annual Average Daily Traffic (HCAADT) is the number of trucks with at least 2 axles and 6 tires that travel a section of road per day (averaged for 365 days in one year). MNDOT measures traffic for road sections every 2-4 years. Note that HCAADT is per section of road. If more sections of road exist for a Route Type, more HCAADT will be reported for that Route Type in the table above. For a normalized comparison of the amount of traffic on each route type, refer to the Heavy Commercial Annual Average Daily Vehicle Miles Traveled map.

Heavy Commercial Annual Average Daily Vehicle Miles Traveled

Southeast Landscape Region



Heavy Commercial Annual Average Daily Vehicle Miles Traveled (2008 - 2012)

- 0.00 - 113.29
- 113.30 - 299.34
- 299.35 - 757.01
- 757.02 - 2437.12
- 2437.13 - 82134.74

Class breaks by quantile.

- No Data

Other Features

- County Boundaries
- Municipal Boundaries
- Lakes
- Rivers

0 5 10 20 30 40 Miles

Sources: HC AAD VMT - MNDOT; Other Features - MNDNR Data Deli

N

Minnesota Forest Resources Council

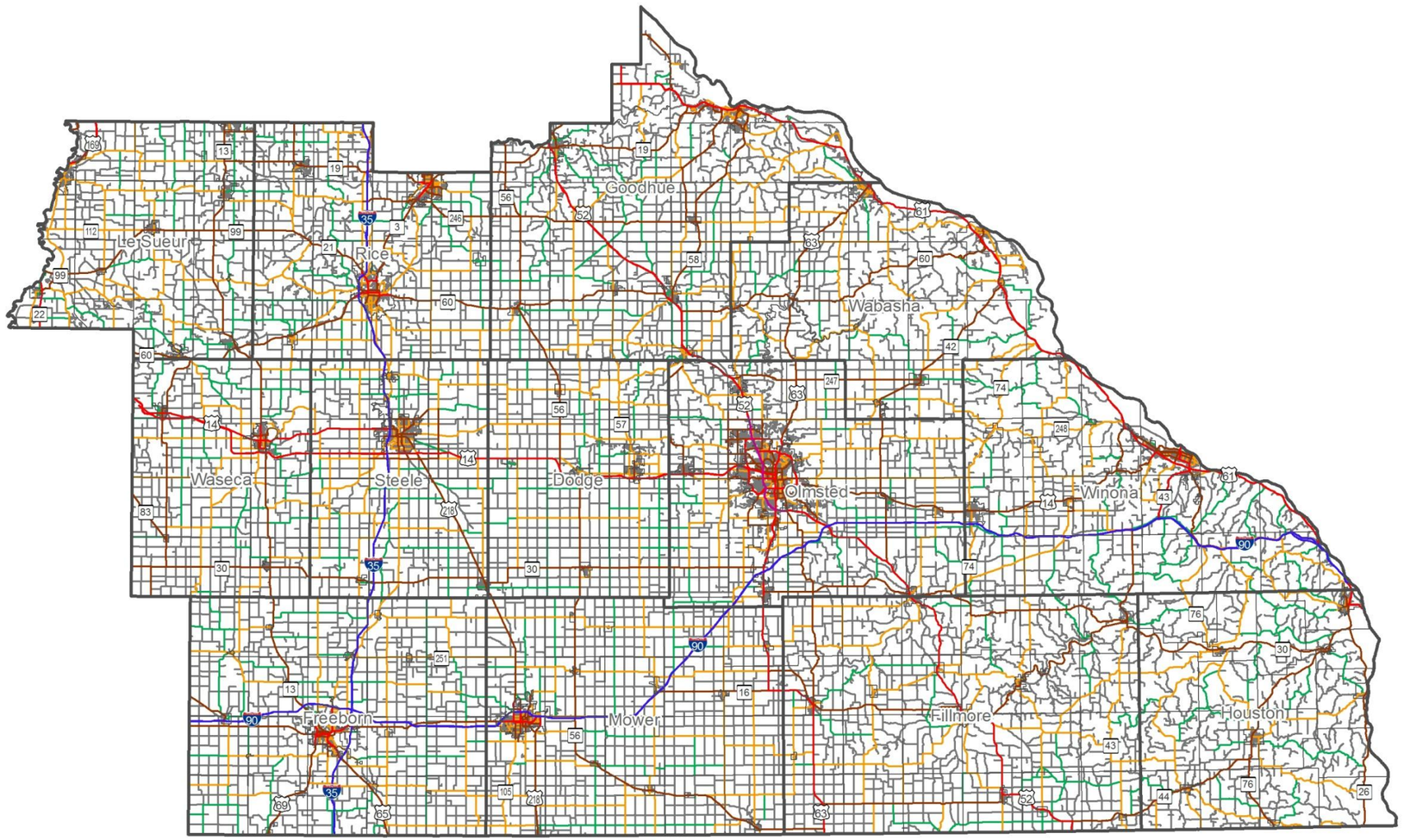
Heavy Commercial Annual Average Daily Vehicle Miles Traveled Table

Route Type	Length (miles)	Heavy Commercial Annual Average Daily Vehicle Miles Traveled
Interstate	415.2	1,200,518
US Highway	670.9	611,621
MN Highway	961.1	188,034
Total	**2047.3**	**2,000,173**

Heavy Commercial Annual Average Daily Vehicle Miles Traveled (HCAAD VMT) is the number of trucks with at least 2 axles and 6 tires that travel a section of road per day (averaged for 365 days in one year) multiplied by the length of the section of road. If 2 trucks traveled a 2 mile section of road every day over the course of one year, the HCAAD VMT for that section of road would be 4. The HCAAD VMT should be used when comparing routes for traffic volume given that it provides a normalized comparison for traffic measurements (the Heavy Commercial Annual Average Daily Traffic count can be skewed by the presence of multiple sections of a Route Type).

Road Functional Classes

Southeast Landscape Region



Road Functional Classes

- Principal Arterial -
- Principal Arterial - Other Freeways & Expressways
- Principal Arterial -
- Minor
- Major Collector
- Minor Collector
- Local

Other Features

- County Boundaries
- Municipal Boundaries

0 5 10 20 30 40 Miles

Sources: Road Functional Classes - MNDOT; Other Features - MNDNR Data Deli

N

Minnesota Forest Resources Council

Road Functional Classes Table

Road Functional Class	Miles
Principal Arterial - Interstate	415
Principal Arterial - Other Freeways & Expressways	21
Principal Arterial - Other	639
Minor Arterial	1,280
Total Arterial	**2,355**
Major Collector	2,256
Minor Collector	1,507
Total Collector	**3,762**
Local	10,721
Total Local	**10,721**
Total Southeast Region	**16,838**

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